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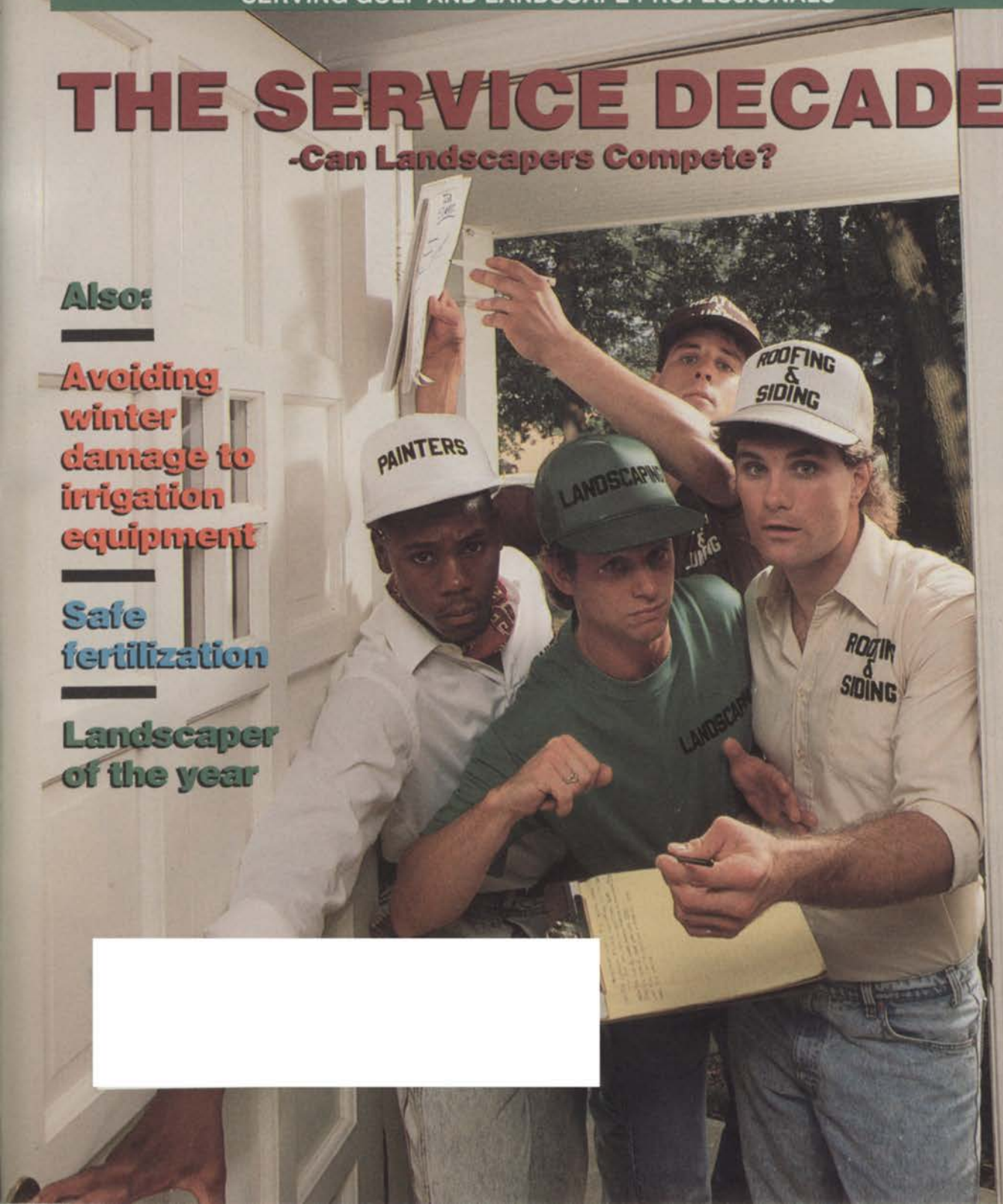
THE SERVICE DECADE

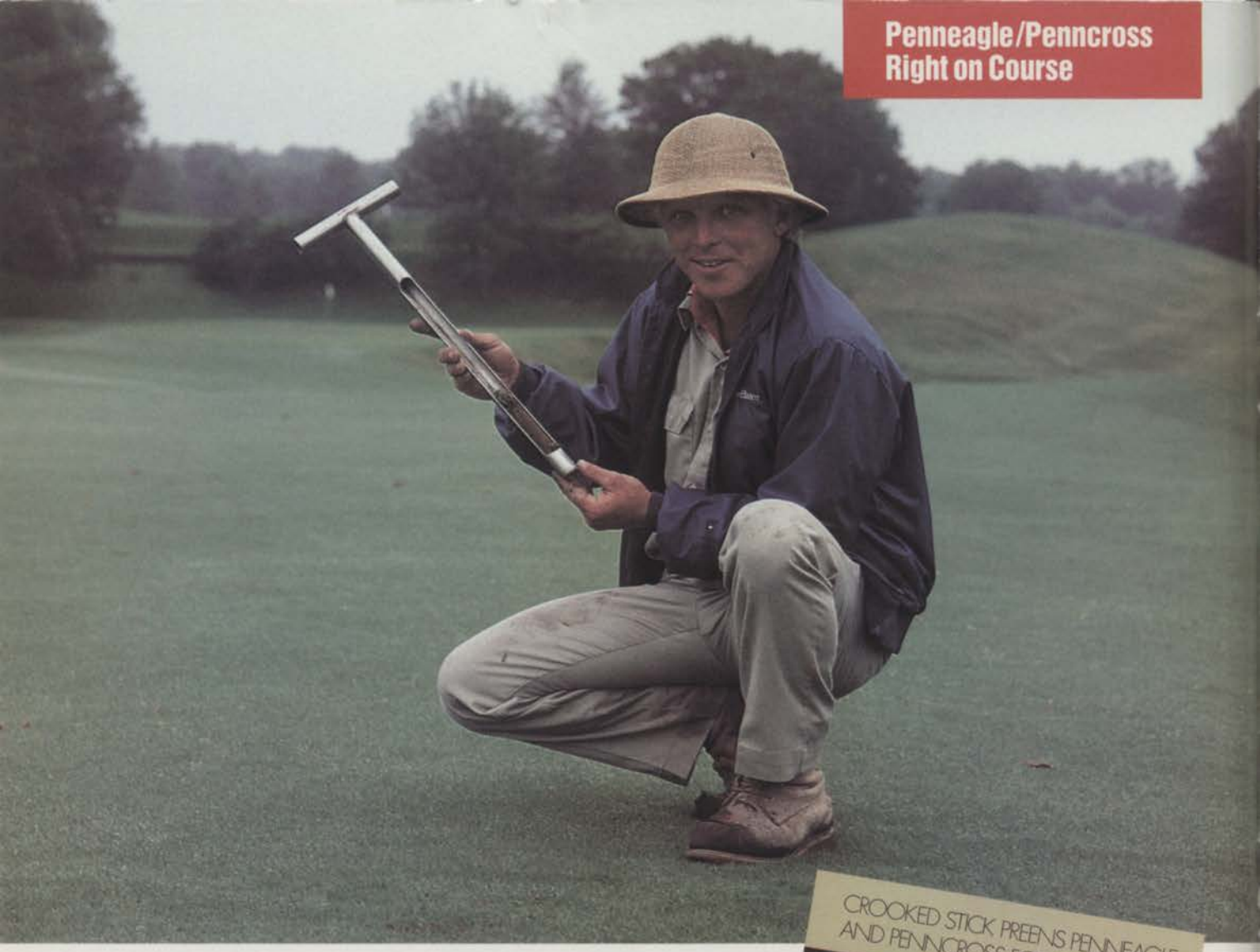
-Can Landscapers Compete?



Also:

- Avoiding winter damage to irrigation equipment
- Safe fertilization
- Landscaper of the year

Penneagle/Penncross Right on Course



David Riedman, Superintendent, Crooked Stick GC, Carmel, Indiana.

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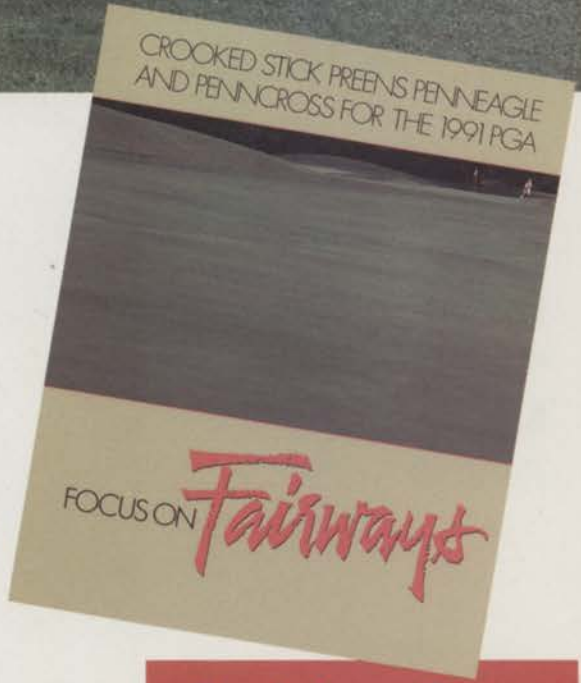

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NOVEMBER 1990, VOLUME 29, NUMBER 11

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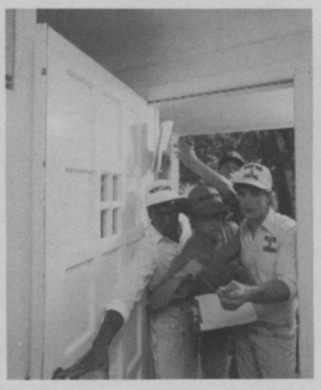

18 COVER STORY: SERVICE IN THE '90s

by Rudd McGary, Ph.D. Amercia wants more and better service in the 1990s. If landscapers are going to compete, they must meet the needs of tomorrow's older, more sophisticated consumer.

24 LANDSCAPE MANAGER OF THE YEAR

by Terry McIver. Training his crew members to have confidence in their ability to keep a campus beautiful and have pride in their work distinguishes this year's contest winner.

30 TURF AND THE ENVIRONMENT

by W. Michael Sullivan, Ph.D. The failure to match material and demand results in unnecessary nitrogen loss. To prevent leaching, landscapers need to balance plant need with the type and amount of nitrogen applied.

34 IRRIGATION EQUIPMENT: AVOIDING WINTER DAMAGE

by David Ferron. Three superintendents suggest a few basic steps to prevent winter damage to irrigation equipment.

DEPARTMENTS

4 As I See It . . .
6 Green Industry News
8 Letters
11 News Briefs
16 Events
38 Quickie-Quiz
40 Jobtalk
42 Research Update
46 Products
55 Ad Index
56 Problem Management

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Jerry Roche
Exec. Editor

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LANDSCAPE MANAGEMENT (ISSN 0894-1254) is published monthly by Edgell Communications, Inc. Corporate and Editorial offices: 7500 Old Oak Boulevard, Cleveland, Ohio 44130. Advertising Offices: 7500 Old Oak Boulevard, Cleveland, Ohio 44130, 233 North Michigan Avenue, 24th Floor, Chicago, Illinois 60601 and 3475 Lenox Road, N.E., Suite 665, Atlanta, Georgia 30326. Accounting, Advertising Production and Circulation offices: 1 East First Street, Duluth, Minnesota 55802. Subscription rates: $25 per year in the United States: $50 per year in Canada. All other countries: $100 per year. Current issue single copies (pre-paid only): $2.50 in the U.S.; $5.00 in Canada; elsewhere $10.00; add $3.50 per order for shipping and handling. Back issues, if available, $10; add $3.50 per order for shipping and handling (pre-paid orders only). Office of publication: Edgell Communications, Inc., 1 East First Street, Duluth, Minnesota 55802. Second class postage paid at Duluth, Minnesota 55806 and additional mailing offices. Copyright© 1990 by Edgell Communications, Inc. All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical including photocopy, recording, or any information storage and retrieval system, without permission in writing from the publisher.

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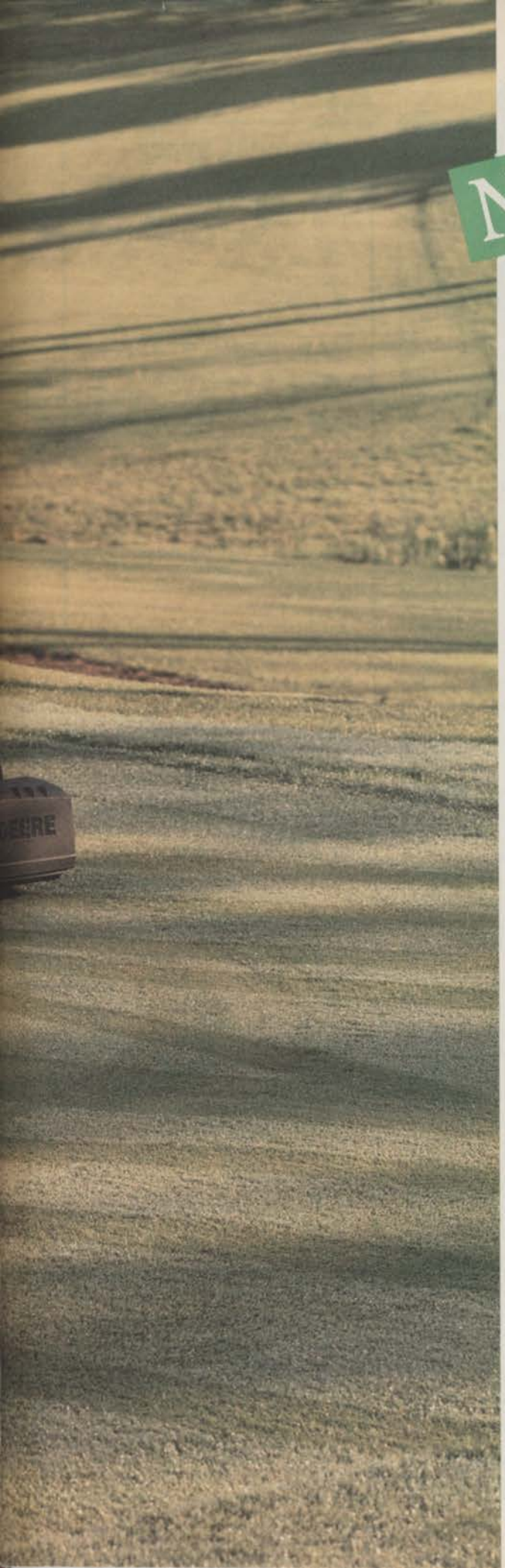

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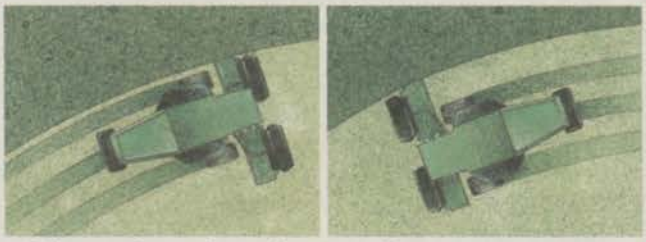

Offset cutting units on the 2243 allow you to stagger your wheel tracks by simply changing your direction of cut.

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AS I SEE IT...

NRVMA learns how to play it safe

The National Roadside Vegetation Management Association isn't standing still when it comes to dealing with environmental and regulatory issues.

At its September annual meeting in Albuquerque, topics for discussion included:

- "Roadside Management During the Nineties;"
- "Environmental Issues that Affect Roadside Management Programs;"
- "Update on Pesticide Regulations."

Instead of taking a strictly defensive stance against herbicide and pesticide regulations, NRVMA is doing its best to tell its side of the story. It's keeping abreast of what's happening, and working for compromise with legislators.

Granted, many of the people against control products are misinformed, and in many cases operate on double standards. They cut their conscience to match the latest trendy concerns. One year it's Ice Age, the next year it's global warming. But the power of the bleeding hearts can't be denied. That's why NRVMA is taking action to inform lawmakers, citizens and the mass media about the safety of carefully researched and tested products.

Four years ago, only the Pacific Northwest had problems with environmental activists. Now it's everybody's problem.

"There's not a highway department that I know of in the U.S. that hasn't had to deal with environmental issues," says Tom Hoogheem, manager of environmental issues for Monsanto.

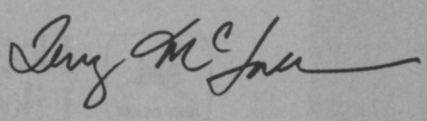
"It's time that we get smart," says Hoogheem. "Vegetation management in this country is under attack. We've got to get serious with the issues, we've got to know how to address the issues and we have to do it right now!"

The best example of NRVMA's concern is its applicator training program, being finalized by Dr. Harvey Holt and various associates. The program is being developed at Purdue University, but Holt is quick to mention that input for the program's content came from professionals across the country.

With the applicator training program, NRVMA hopes to eliminate what is a leading cause of activist zealotry: the mistake.

"I firmly believe, that where there has been environmental impact, 99.9 percent of it has been through misuse," suggests Hoogheem, who says applicators must "...do it right, or we'll lose the right to use the products."

The NRVMA applicator training program covers every base of applicator safety. It's a great step forward for NRVMA, and the association deserves credit for thinking ahead, and for taking appropriate action.



Terry McIver, associate editor

LM

EDITORIAL STAFF

Jerry Roche, Executive Editor
Will Perry, Managing Editor
Terry McIver, Associate Editor
Office: 7500 Old Oak Blvd.
Cleveland, OH 44130
(216) 243-8100
FAX (216) 826-2832

MARKETING STAFF

Jon Miducki, Associate Publisher
Ann Langhenry, Midwest Sales Manager
Paul Garris, North Central Sales Manager
Bob Earley, Group Vice President
Office: 7500 Old Oak Blvd.
Cleveland, OH 44130
(216) 243-8100
FAX (216) 826-2832

Dick Gore, E. Coast Representative
Office: 3475 Lenox Rd. N.E.
Suite 665
Atlanta, GA 30326
(404) 233-1817
FAX (404) 261-7022

Robert Mierow, W. Coast Representative
Office: 1515 NW 51st Street
Seattle, WA 98107
(206) 783-0549
FAX (206) 784-5545

Tom Greney, Senior Vice-President
Office: 233 North Michigan Avenue 24th Floor
Chicago, IL 60601
(312) 938-2328
FAX (312) 938-4850

SUPPORT STAFF

Carol Peterson, Production Mgr.
Connie Freeland, Prod. Supervisor
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Bonnie DeFoe, Directory Coordinator
Gail Parenteau, Reader Service Mgr.
Office: 120 West Second St.
Duluth, MN 55802
(218) 723-9200
FAX (218) 723-9223

David Komitau, Graphics Coordinator
Ted Matthews, Promotion Director
Office: 7500 Old Oak Blvd.
Cleveland, OH 44130
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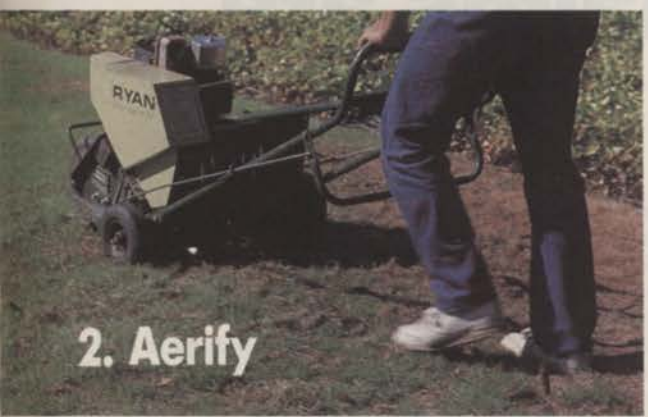

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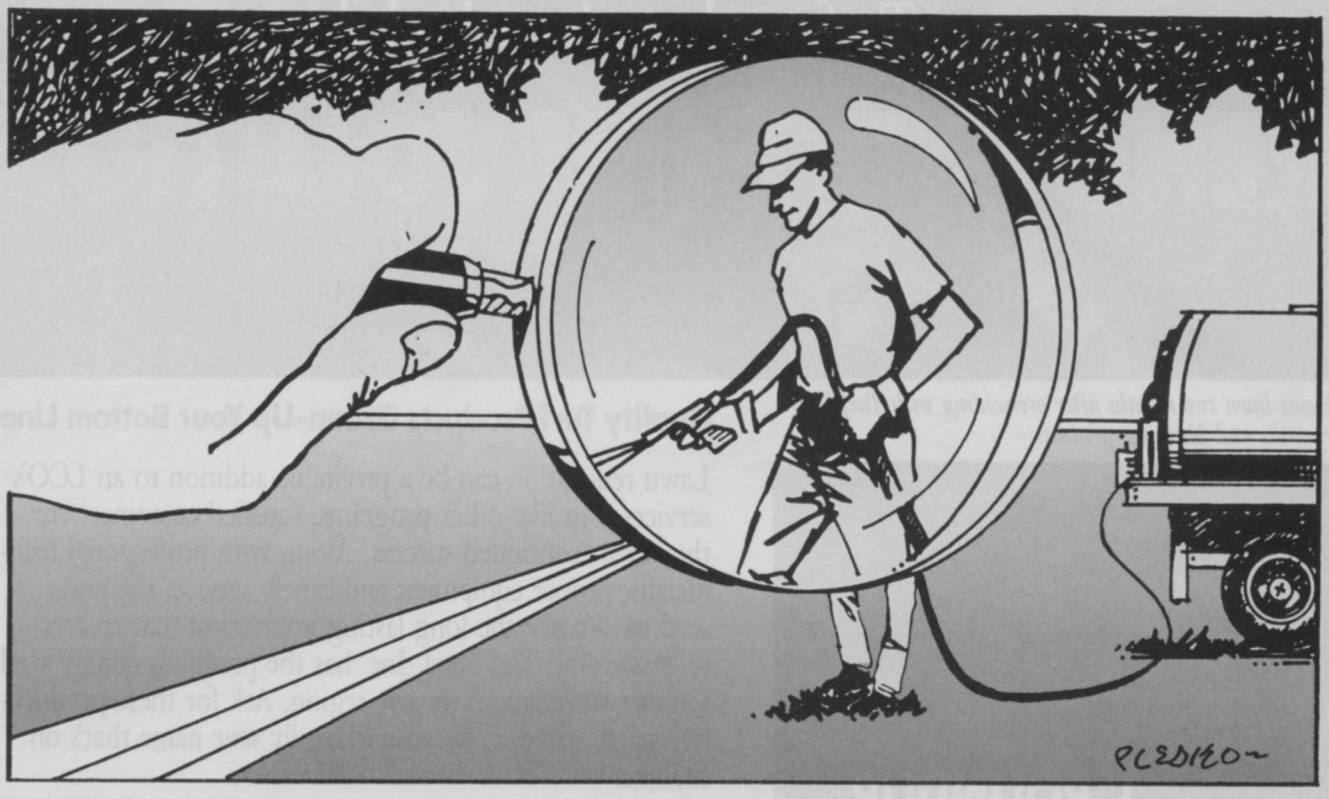

LAWN CARE

Lawn care ad claims are ripped by angry Iowans

IOWA CITY, Iowa — Advertising for lawn care services is again under scrutiny, this time from an anti-pesticide group here.

Environmental Advocates, Inc. recently filed a complaint against three lawn care companies for publishing what it believes are misleading statements.

The companies are All-American Turf Beauty, ChemLawn Services Corp., and Spring Green Lawn Care.

According to Daryle Johnson of All-American, in one of the complaints, his company was singled out for claiming that, "For your convenience, All-American Turf Beauty will post a small sign on your lawn to indicate when a pesticide application has been made."

Johnson says the company was also criticized because its literature says that products, "once properly diluted and applied according to label directions, pose no unreasonable health or safety risk to people, pets or the environment."

Ron Vogel, a member of the anti-pesticide contingent, told LANDSCAPE MANAGEMENT he believes the attorney general would decide in the group's favor.

But Steve Moline of the Iowa attorney general's office says the issue is not about chemical safety.

"We're going to focus on the information given to the consumers of that product," says Moline, "and whether or not it's accurate or misleading. As to whether the chemical should or shouldn't be used, that's not part of our determination."

Environmental Advocates believes a recent settlement in New York state over lawn service advertising gives it a leg up in the matter. In the New York suit, ChemLawn agreed not to imply that the pesticides it uses are "safe" or "nontoxic," even though it had never made such statements prior to the suit.

When asked about what he had in mind to replace chemical maintenance, Vogel said, "We have to remember that these (control products) have only been in existence for 30 to 40 years, and certainly humans existed perfectly all right without them before. It's not like it's a necessity."

—Terry McIver□

RESEARCH

Bermuda is well-adapted to California

RIVERSIDE, Calif. — Hybrid bermudagrass is well-adapted to much of the state of California, according to research findings from the University of California cooperative extension.

A three-year study by Dr. Victor Gibeault revealed that bermuda has the necessary deep root systems, low water use rates, good foot traffic tolerance during warm months and low pest susceptibility.

In another study, this by Dr. Stephen T. Cockerham, the quality of common bermudagrass overseeded with different cool-season grasses was found to vary significantly, depending on subsequent foot traffic.

Gibeault says his study was done "to compare the winter color of different lines and to identify the environmental factors most responsible for their dormancy."

Gibeault

Cockerham

One reported drawback is that not all the hybrids showed good winter color, and winter dormancy remains a problem.

Gibeault reports that the least dormancy among commercially available grasses was found in Santa Ana, Tifway II and Tifway.

"In contrast," adds Gibeault, "Tifgreen and Tifgreen II were dormant for a long time."

Little differences in dormancy were noted among the common bermudagrasses Sahara and Arizona common. "They showed more dormancy than the good performing hybrids, but less than Tifgreen or Guymon," says Gibeault.

Soil temperature was most closely associated with dormancy. "Once soil temperatures dropped below 50°F for one to two weeks," says Gibeault, "all bermudagrasses lost all of their color."

In the Cockerham study, turf plots were overseeded with six cool-season grasses. Control plots were left free of simulated sports-cleat traffic. The others were subjected to simulated traffic equivalent to two-thirds of a football game, for one day a week beginning in February, 1987. The highest quality overseeded bermudagrass turf without traffic was produced by the two perennial ryegrasses followed closely by three fescues. Roughstalk bluegrass and annual ryegrass were acceptable, but their quality was significantly lower in the traffic plots. Annual ryegrass and two fine fescues performed slightly better.

Two perennial ryegrass overseedings performed "remarkably well" under traffic through a wide range of temperatures. □

PESTICIDES

Consumers reveal desire for strict pesticide regs, says Waste Management

OAK BROOK, Ill. — Consumers would sharply increase the level that professional pest control companies are state and federally regulated, according to a new national survey of Americans.

Only 29 percent of U.S. households feel that current state and federal regulations concerning professional pest control companies are adequate. Almost 55 percent feel that such regulations need either "substantial" or "some" improvement. This concern is balanced by strong feelings regarding the important benefits of professional pest control services in public places.

The survey, was commissioned by WMI Urban Services, Inc., a subsidiary of Waste Management, Inc.. Among its other key findings were:

- More than 86 percent of respondents felt that implementation of more rigid testing and licensing procedures for pest control technicians was either "extremely" or "very" important.
- More than 78 percent of those surveyed indicated that chemicals and other materials used by professional pest control technicians should be restricted to their use and should not be available to the public through retail stores.
- Almost nine out of ten respondents (88 percent) feel that it is "very important" that public places use professional pest control services to protect the health of all who visit those places.

"This research indicates that the general public strongly supports increased state and federal regulation of the professional pest control industry," said Dave Quarterson, WMI Urban Services vice president. □

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LETTERS

Three cheers...

To the editor:

Three cheers for LANDSCAPE MANAGEMENT!

I read your editorial in the August issue. If we can extract 10 percent of the quality companies in the landscape contracting field (if they will give us a try), I know through the quality programs that our association has, we well retain 50 percent of them on a second-year basis.

The Associated Landscape Contractors of America (ALCA) is one of the best-kept secrets in the green industry. There is a lot more than meets the eye.

Thank you for your recent comment. We really appreciate it.

Robert M. Maronde Jr.
ALCA president
Falls Church, Va.

...And a boo

To the editor:

As a professional in the landscape management field, I highly regard your publication. I have never been offended by any of your ads before, as many can easily be geared toward the male readers.

I was, however, taken aback by the advertisement on page 49 of your August issue. I am sure I speak for many of my female colleagues when I say, "Wake up, the times have changed!"

Professional publications are no place for sexist ads, especially in a field where women represent a growing force. Granted, the advertiser is to blame for implementing antiquated advertising schemes, but it seems your editing department would do a better job of selecting what goes into your magazine.

K. Squares
Golf course horticulturist
Richmond, Va.

Late-season N

To the editor:

I read with interest the August article about late-season fertilization. Its importance has not been emphasized enough as a way to promote shoot, rhizome and stolon growth on cool-season grasses.

The article discussed several nitrogen sources for late-season applications, including quick-release inorganics, slow-release synthetic organics and natural organics such as Ringer's high-protein meal-based fertilizers. The article stated that using a product such as Ringer's which relies on microbial activity for N release would be the equivalent of a dormant fertilization.

Research conducted by Dr. Tony Koski at Ohio State and Colorado indicates that using Ringer in a late-season fertilization program enhances turf color and quality later into the season than other N carriers tested. The turf greened up faster in the spring as well.

It appears from Dr. Koski's work that Ringer's natural organic product is an effective late-season fertilizer despite dependence on microbial activity.

I look forward to reading more about natural organic management of turf and ornamentals.

P.J. McGinnity, Ph.D.
Ringer Corp.
Minneapolis, Minn.

(Dr. Koski likes Ringer's fertilizer. "It yields a nice even nitrogen release curve, good color response and residual activity," he says. "At Ohio State, it worked much better than we anticipated as a late—season fertilizer" with tendencies toward enhanced water infiltration rates and higher soil carbohydrate levels.—ED.)

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LAWN CARE

PLCAA urges small LCOs to join up

MARIETTA, Ga. — The Professional Lawn Care Association of America (PLCAA) says it remains firmly committed to all segments of the lawn care industry, and hopes to see smaller companies in attendance at its annual meeting in Nashville this month.

"PLCAA has an enthusiastic and professional staff who are being creative and who are looking for new ways to help this industry meet the challenges ahead," says Bob Andrews, a PLCAA board member, and president of The Greenskeepers of Carmel, Ind.

The theme for the Nashville meeting, "One Day's Drive," is meant to encourage smaller lawn care companies to take the time to make it to the show.

continued on page 11

Paul Garris

PEOPLE

Landscape Mgt. adds to staff

CLEVELAND — Paul N. Garris has been added to the marketing staff of LANDSCAPE MANAGEMENT magazine, according to associate publisher Jon Miducki.

Garris will serve as North Central States sales manager with responsibilities from Ohio to the upper Great Lakes region. He brings seven years of newspaper advertising experience with him.

Look for LM's entire marketing staff at the Green Industry Expo's Early Bird Reception, which the magazine is co-sponsoring Nov. 12 in Nashville, Tenn. □

NEWS BRIEFS

NRVMA AWARD WINNERS... The National Roadside Vegetation Management Association presented its 1990 awards during its annual meeting in Albuquerque, N.M. The awards are given annually for exceptional performance by state, city and county highway departments. Accepting the awards for their respective departments were:

- **Roy L. Smith,** Texas State Department of Highways and Public Transportation;
- **James Mathews,** Orange County (Fla.) Highway Maintenance Department;
- **Dempsey Benton Jr.,** Raleigh, N.C.;
- **David Spatcher** of Dupont received the "Roadside Support from Industry" award.

NEW CHEMLAWN PRESIDENT...David Siegfried has been named president of ChemLawn. Prior to joining the Columbus, Ohio-based company, Siegfried was president of Burlington Airline Express in Irvine, Calif.

HARDER AND HARDER... It is getting more difficult to register a pesticide for use on turf, according to statistics from the Mobay Corporation, a division of Bayer USA. Speaking at the Kentucky Turfgrass Conference, Mobay's **Sue-Ann Sietz** noted that just one or two of 20,000 chemicals screened each year actually makes it to the market. "It costs a minimum of $28 million to bring one compound to market," she noted. Sietz says that it takes eight to 18 years for a chemical to go from synthesis to sales. That includes 10 to 12 months to get federal approval on a new product. "And individual state registration is becoming a major concern," she said, noting especially tough state laws in California, New York and Massachusetts.

A CHANGE AT AAN...Larry Scovotto is no longer executive vice president of the American Association of Nurserymen, reports association president **Rick Henkel.** A successor will be named soon by the board of directors.

OAK TREE JUSTICE... The venerable Treaty Oak in Austin, Texas, received judicial standing in the courts earlier this year when Paul Stedman Cullen was sentenced to nine years in jail. Cullen was convicted of maliciously poisoning the historical tree, valued at $46,000, last summer (see LM, Sept. 1989). According to a report in *Urban Forests*, only 20 percent of the tree's crown came to leaf this season. Some of the dead wood is being slated to become artwork and more than 80 seedlings have been propogated to ultimately replace the oak, according to city forester **John Gedraitis.**

PLCAA *from page 8*

"This program," says Andrews, "will focus attention on the need for smaller lawn care companies across the country to actively support the national association."

Andrews is excited about PLCAA's new-member incentive programs, which he describes as "more relevant to the smaller operator." To boost membership, Andrews says companies which join PLCAA during the Nashville show will receive a special incentive package worth hundreds of dollars. Additionally, Andrews says the association has strongly committed itself "to developing a program of member services that will bring all members true value for their membership dollar."

To register for the conference, call the PLCAA at (404) 977-5222. □

NEXT MONTH:

Our annual "State of the Green Industry" report mixes the good news with the bad news. Also:

- ***Community and worker right-to-know laws and how they affect your business***
- ***Should you buy or lease large equipment?***
- ***Complete Green Industry Expo report from Nashville, Tennessee***

(P.S. — Look for our gala January, 1991 GCSAA golf show issue.)

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TURF

Overseeding should be thought about 12 months of the year, Bruneau says

RALEIGH, N.C. — Winter overseeding is an annual event we should be thinking about all the time, says Art Bruneau, Ph.D., of North Carolina State University.

"Overseeding bermudagrass ought to be in the back of our minds 12 months out of the year because we need healthy, dense turf in order for it to endure the physical abuse it takes during the actual overseeding process," says Bruneau.

Year-round proper mowing frequency and height, fertilization, and manageable thatch levels are essential to successful overseeding, says Bruneau.

Speaking at the North Carolina Turfgrass and Landscape Field Day, Bruneau adds that the best time to overseed is when soil temperatures are between 76 and 78 degrees, or about 30 days before the first frost.

"The rationale is that if the seedlings start coming up (hopefully within 30 days) the bermudagrass will start going off color, slowing in growth and then the overseeding will kick in and no one will be the wiser for what you've done out there."

Bruneau suggests we aerify four weeks and verticut two weeks in advance of overseeding in order to give the bermudagrass time to heal. Two to three days prior, stop mowing. The taller turf will slow down potential washing of seed.

As for seed selection, Bruneau suggests we use certified, blue tag seed. Ryegrass is the most common, alone or with fine fescue or *Poa trivialis* (rough bluegrass). Seed treated for disease prevention is desired. "We need that treatment to prevent the loss of grasses when we reach the higher summer temperatures," he notes.

Bruneau prefers higher rates: 30/lb. per 1,000 sq. ft. for greens; 200 to 225 for fairways; 5 to 15/lb. per 1,000 sq. ft. for home lawns. (Note: ryegrasses won't have great density at lower rates. Use 10 to 15/lb. per 1,000 sq. ft. if density is a major concern.)

"If you go with the higher rates you'll hopefully end up with plants that will stay in the juvenile state throughout the fall and into early spring. If you plant too early, the plants mature, persist longer and probably won't go out when you want them to."

Also, don't fertilize two to three weeks after seeding, says Bruneau. After three weeks, use ½ lb. of quick-release N per 1,000 sq. ft. every 3-4 weeks.

During the transition period, adds Bruneau, verticut weekly, lower the mowing height to put stress on cool-season grasses, aerify and lightly verticut. □

RIGHTS-OF-WAY

Plant research seeking to alleviate three 'syndromes'

ALBUQUERQUE, N.M. — Harlow Landphair of the Texas Transportation Institute believes that three "syndromes" as related to perception of highway maintenance need to be corrected:

- In "The Green Scrap Syndrome," the highway and its rights-of-way areas are considered to be "leftovers."
- "The Green Fantasy Syndrome" causes the highway corridor to be viewed as similar to, or an extension of, the surrounding landscape.
- In "The Green Beligerence Syndrome," roadside plants are viewed as "little green things" that defy permanent solutions.

In a new research program at Texas A&M University, Landphair works in cooperation with the state highway department to clearly define the purpose and importance of roadside vegetation.

A "field laboratory" consisting of sections of roadside area near the Texas A&M campus in College Station is being used for the research.

"The initial research includes four areas of inquiry," explains Landphair: slope stability and erosion control; plant dynamics; moisture and plant hydraulics; and drought and pollution tolerance.

"The specific objective of this program," he continues, "is to better understand the engineering properties of plant materials so they can be used more effectively and reduce the cost of roadside maintenance."

The basic functions of the roadside, says Landphair, make it more deserving of special attention.

"The immediate shoulder provides information, lighting, emergency stopping areas, and runoff recovery. The middle zone is usually occupied by drainage channels. The back slope generally provides space for large information standards and lighting, as well as access to and screening from adjacent property."

According to Landphair, environmental conditions surrounding the roadside also make it worthy of more care.

—*Terry McIver*□

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EVENTS

NOVEMBER

10-14: Landscape and Grounds Management Conference co-sponsored by ALCA and the PGMS, Nashville, Tenn. Contact: (404) 977-5222, (703) 241-4004 or (301) 667-1833.

12-15: Nashville '90 sponsored by The Professional Lawn Care Association of America. Contact: PLCAA, 1000 Johnson Ferry Rd. NE, Suite C-135 Marietta, GA 30068-2112, (404) 977-5222.

27-28: Professional Landscape Management School and Trade Show. Contact: Larry Caplan, Purdue University Cooperative Extension Agent, Room 202, City-County Bldg. Evansville, IN 47708; (812) 426-5287.

27-29: National Fertilizer Solutions Association annual meeting, Cervantes Convention Center, St. Louis. Contact: Sarah Houser, NFSA, 339 Consort Dr., Manchester, MO 63011; (314) 256-4900.

29-30: The Great '90s Equipment Show and Conference, Sabal Park Hotel, Tampa, Fla. Contact: Charles E. Bingaman, P.O. Box 728, Largo, FL 34649; (813) 584-2312.

DECEMBER

3-6: New Jersey Turfgrass Expo '90, Trump Taj Mahal, Atlantic City, N.J. Contact: Dr. Henry W. Indyk, Crop Science Dept., P.O. Box 231, Cook College, New Brunswick, NJ 08930; (201) 932-9453.

4: North Central Turfgrass Expostion, Springfield, Ill. Contact: Illinois Turfgrass Foundation, (312) 644-0828.

4-5: Rocky Mountain Turf Conference, Denver. Contact: Rocky Mountain Regional Turfgrass Association, P.O. Box 903, Parker, CO 80134; (303) 688-3440.

4-5: Southern Grounds and Turf Maintenance Exposition and Conference, Myrtle Beach, S.C. Contact: Special Events, State Tech, 111 Executive Center Dr. Columbia, SC 29210; (803) 737-9356.

4-6: Illinois Turfgrass Foundation trade show, Springfield, Ill. Contact: Illinois Turfgrass Foundation, (312) 644-0828.

4-6: South Carolina Annual Grounds Maintenance Conference and Trade Show, Greenville-Spartanburg Airport Marriott. Contact: P.O. Box 325, Clemson, SC 29633.

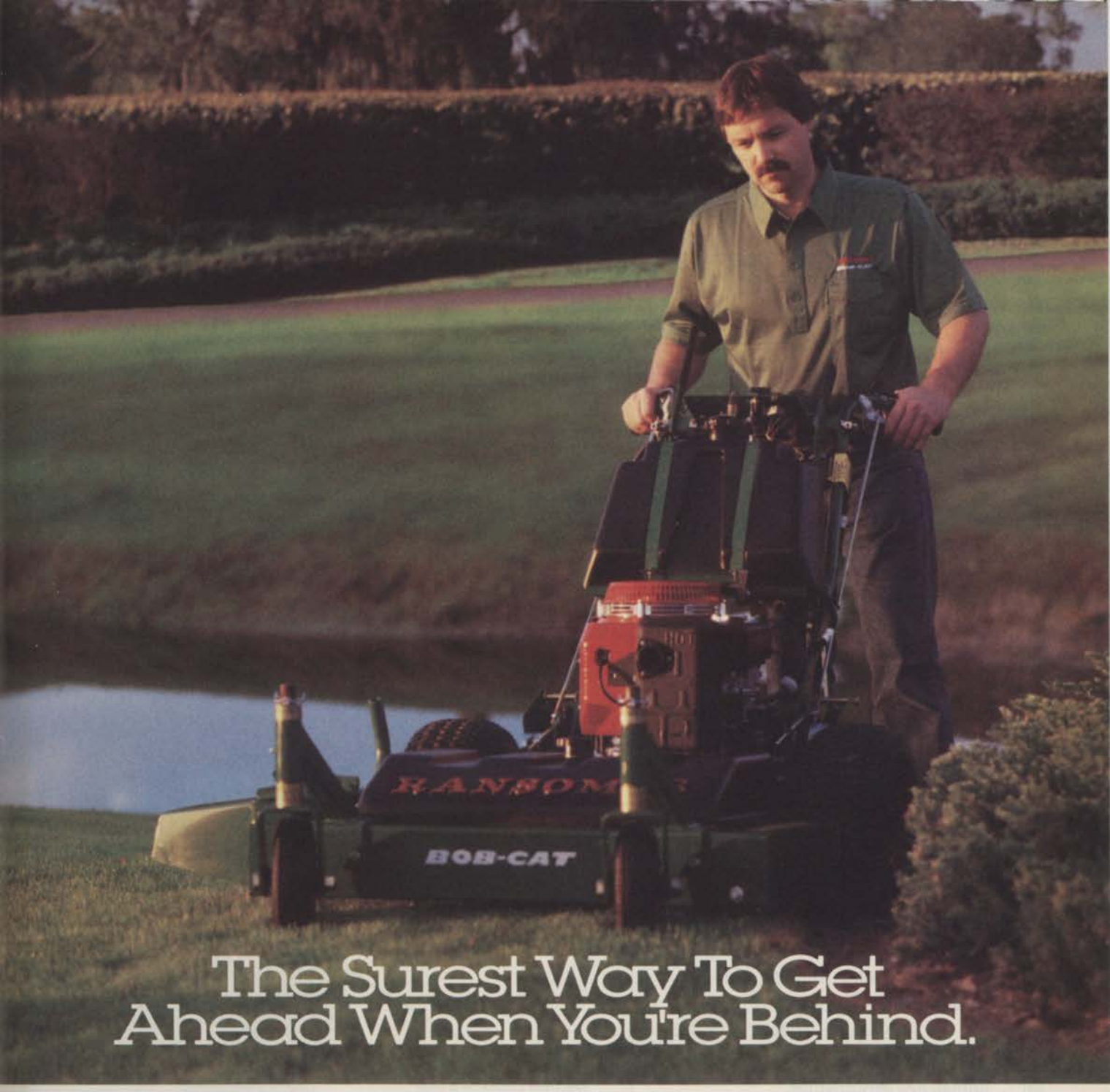
4-6: Professional Lawn Care Association of Mid-America convention, Market Center and Park Place Hotel, Kansas City, Mo. Contact: Olivia Golden, PLCAMA, P.O. Box 35184, Kansas City, MO 64134; (816) 765-7616.

10-12: Missouri Lawn and Turf Conference and Trade Show, Clarion Hotel, St. Louis. Contact: Missouri Valley Turfgrass Association, Conference Office, 344 Hearnes Center, University of Missouri, Columbia, MO 65211; (314) 882-4087.

11: Roadside and Right-of-Way Vegetation Management, Rutgers University. Contact: Office of Continuing Professional Education, Cook College; P.O. Box 231, New Brunswick, NJ 08903; (908) 932-9271.

11-13: Alabama Grounds Managers Certificate Program, Bessemer State Technical College. Contact: Frances Hannah, (205) 428-6391.

12-14: Desert Turfgrass/Landscape Conference and Show, Bally's Casino Resort, Las Vegas. Contact: Desert Turfgrass Show, P.O. Box 94857, Las Vegas, NV 89193-4857; (702) 739-8500. **LM**



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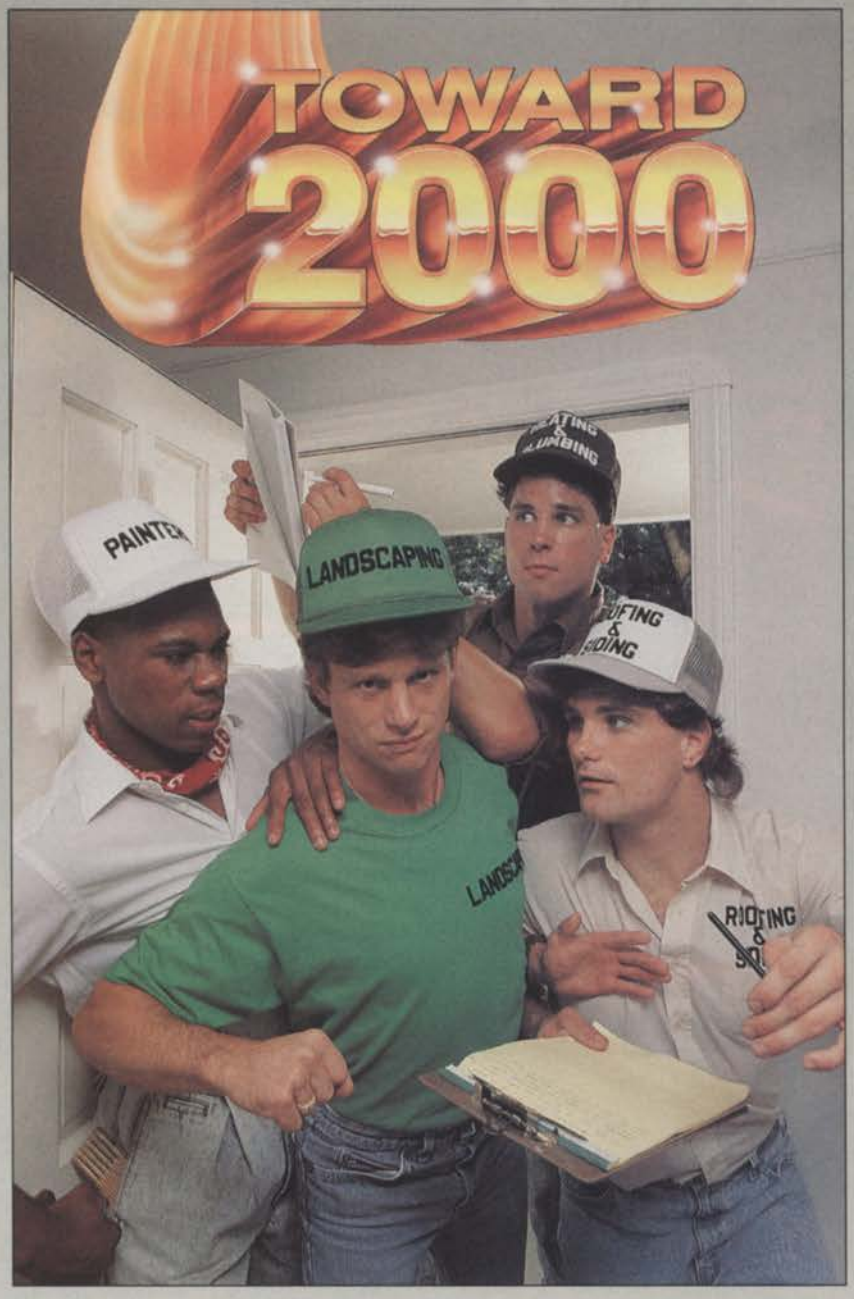
COVER STORY

SERVICE IN THE 90s



by Rudd McGary, Ph.D.
Senior consultant, AGMA Inc., Columbus, Ohio

America wants more and better service in the 1990's. If landscapers are going to compete, they must meet the needs of tomorrow's older, more sophisticated consumer.

Over the past twenty years, America has changed from a product market to a service market. More than 50 percent of the money spent in the U.S. now goes to services.

The good news for the consumer is that there will be a wide variety of services from which to choose. The question to be asked by the green industry is whether or not the coming competition for the consumer's dollar is something to celebrate or to worry about. Certainly there are many changes in life patterns which make the future promising for a variety of services.

Quality, though, will still count. A series of articles appeared in various publications during the late '80s which dealt with service—more specifically, with the lack of service. One oft-quoted article in *Time* magazine dealt with the airline industry and the type of service it was offering—horrible. Planes were late, overcrowded, and airports were battlegrounds for frequent travelers. It was a mess. But with consumers insistently demanding improved service, they finally got help. Current traveling conditions indicate that the consumer was heard.

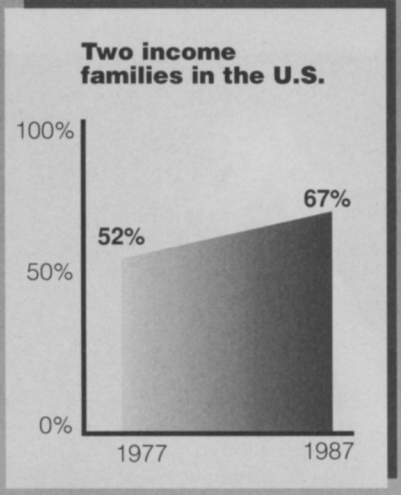
The unknown quantity seems to be the consumers and the way they will act or react.

Consumer demographics discussed are predictions based on current information. The regulatory aspects of the green industry are here and likely to remain. The unknown quantity seems to be the consumers and how they will act or react to the changes predicted. Actually, there is a lot we know about what consumers want, as we'll see later.

Can the green industry take advantage of these new patterns or will it become the railroad industry of the future? □

'90s DEMOGRAPHIC ISSUES

For some time now, the "graying" of society has been discussed. In various papers, the Rand Corporation Population Research Center has come up with several other important trends which will be seen in the next decade, many of which will significantly affect the green industry.



Two-worker families

The wife/mother of the family is going into the workplace, often to increase the ability of the family to buy a better home or buy certain types of major consumer goods or products (see chart). These families are likely to buy more services, and also are interested in "quality of life" time with the family. This means that many families are looking for services which create more time with the family. Outdoor maintenance work around the house is certainly in this category, as is lawn care. With two-worker families becoming more the norm, continued demand for home outdoor services is more likely.

Dominant age group by 2000: 35-54

A large group of people are at the peak of their income potential. This large group of people, the original "baby boom" generation, will most likely be buying expensive first homes or trading up to more expensive homes. There will probably be a group of people who are older, have more resources to spend on service, and are most likely without the time to do many of the maintenance jobs necessary around a home. This is obviously an opportunity for the entire industry, but before we get too excited consider:

Larger inside space, smaller outside

A trend for the future will probably include larger interior spaces for homeowners but less space outside the actual structure itself. Some of this thinking is already shown by the use of more common spaces in condominium living, rather than individual outdoor spaces.

The green industry needs to look at more services than simply lawn care since the space to care for will probably be smaller. And it also needs to focus on new marketing opportunities which occur because of collective buying or multiple service buying patterns.

Based on current trends, according to Rand, younger workers will become harder to find, thus a severe shortage of entry level workers.

Companies that aren't capable of training their own people are going to be in big trouble. The shortage of entry level people will mean that finding qualified people will be difficult, so the burden of training will fall on the company that is hiring.

In addition, keeping the employees will become a greater issue than it is today. This will mean that people management will be much more important and that company benefits will be extremely important. Once somebody is employed and trained, the companies will have to work harder to keep him or her than in the past.

The older people in the workforce will have more places to work. Generally, the type of work will be more in administrative positions. But you should also look to the older generation for help in the sales area where retired sales people could be used during peak sales times. In addition, your training department could be run by people with previous industry experience but don't want to work on a day-to-day basis. □

'90s GOVERNMENT INVOLVEMENT

There is government in your future. This should come as no surprise to anyone who has been involved with the green industry, but certainly the government regulations are likely to become more pervasive than ever before. Some trends have already shown themselves.

State governments will dominate regulation. Throughout the Reagan presidency, the burden of power was generally shifted to the state level. This is seen clearly in the state legislation which has been passed in states such as Massachusetts and Ohio. The state governments are the ones which are likely to make changes in restrictive use of various materials, specifically herbicides and pesticides.

In addition, it is likely that licensing for handling and usage of materials will become much more strict in the future. In many cases the general public is not the force behind governmental regulations, rather various interest groups are spearheading the movement. This isn't going to abate in the near future, and more restrictions are likely.

Some companies might wring their hands and talk about the good old days, some are so good that they welcome the need to be more effective and professional. Certainly there have been proposed legislative actions that were not well conceived because they were too restrictive. (Most of them were defeated in state legislatures.)

There is a trend toward more environmental concern, as can be seen by coverage in the mass media. This trend is almost certainly irreversible.

If you want to cope in the future, you must be prepared to do so in a more restrictive atmosphere. While many people worried about the imposition of new regulations, for the most part the new regulations already imposed have not had the impact that many predicted—either for good or bad. They are a way of life, and are likely to remain an important part of the future. □

'90s

WHAT THE CONSUMER WANTS

The consumer has been telling us what he or she wants for years now. Sooner or later the green industry will listen.

How do consumers feel about services in general? "Not very good" is the answer. From being ignored in a retail store, to having someone who is incompetent trying to perform a service for which they haven't been correctly trained, to dealing with a service department that thinks repair calls are the lowest form of work—everyone seems to have a horror story dealing with service.

How to spend my service dollars? A "dilemma" facing the aging, prosperous baby-boomer generation.

Though service is an intangible, customers are concerned about certain issues that all good service companies will focus on in order to prosper. Here is what consumers want.

When dealing with any type of regulated materials—in the green industry's case, herbicides and pesticides—consumers are concerned about what is being used. This is certainly changing as the mass media report on ecological issues. Every oil spill causes fallout for the green industry based simply on the ecological issues. All the press given to these issues creates consumers who want safety.

In a market survey for one of our clients, consumers were asked if they were concerned about using safer products and techniques. More than 80 percent responded they were "very concerned" or "extremely concerned." This is a pattern we see around the U.S.

However, a second question on this questionnaire asked if the respondents would be willing to take a *50 percent* increase in price in order to achieve safety. Only 11 percent of the respondents said that they would.

So the green industry isn't going to be able to charge a great deal more to deliver a safer service. This means training in safety and product use must play a major role in the efforts of any successful green industry company. It also means a certain kind of advertising and marketing is going to be needed in order to attract customers.

The consumer is always interested in results. But more, he or she wants some understanding of what is being done to the property. It is no longer acceptable to simply do a good job; you must let the consumer know what is happening when—and even before—it happens.

The consumer also wants to be comfortable with *how* the job is done. The time when you could simply do your job and know that you could retain the customer is gone.

Results are one thing, but if you don't even have a chance to get the results because of poor selling and marketing, you can't do much to grow your company. And if you aren't communicating with the customer while performing the job, the customer of the '90s is going to get nervous and switch services.

Finally, customers of today worry about what's going to happen if something goes wrong. Many companies offer a guarantee, often built around the individual customer. But if other companies begin to offer this, it becomes an accepted part of the industry and not a way to differentiate between companies.

What consumers want is not only the guarantee but also the type of communication that makes them comfortable calling the company.

- Polite, informed people have to answer the phone;
- Re-service calls must be as speedy as possible (and always professional); and
- The people who work on the property must try to contact the owners to inform them about how, when, and why the repair or re-treat is going to be done.

For most, consumer communication after the service means a rash of first-time service calls, but it also means longer customer retention.

When a consumer wants a kitchen remodeled, he or she doesn't want to contract 20 different services from plumbers to painters to carpenters. The consumer wants a general contractor to handle it all.

This is also becoming more true in the home services area. And if a company does a good job of one service, it is likely to have the inside track on getting the customer to buy another.

Certain types of services such as plumbing are one-time, generally emergency services where speed of delivery is important but building a long-term relationship isn't. Clearly, that type of service is not competing with lawn/landscaping services. Just as clearly, if a customer has a specific important need, such as having electricity or the furnace functioning, then any non-essential services will be second in line to purchase.

Companies which realize this competitive nature will best serve the consumer.

Competition for the consumer's dollar takes place not among companies but in the consumer's mind. And the quicker your marketing people note this, the better off the company will be.

No one wants to buy something that isn't going to work. And when the economy tightens up, you can be sure that consumers will become better buyers.

So the growth company in the next decade will help consumers make intelligent choices, and it will be the prime source of services the consumers want. □

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'90s

IT'S YOUR MOVE...

The three major areas to consider as we go into the 1990s are:

1) The way the overall makeup of the country will affect not only the buyers but also the labor force for the green industry.

2) The fact of more government regulation, particularly from the state sector.

3) The needs of consumers and how the green industry fits into the general buying pattern.

As more people move to dwellings with smaller outside properties, companies will have to diversify to find more revenue per customer. Without doing this, almost all companies will be in extreme hardship within the next decade.

Another possible scenario will be the selling to a collective buyer rather than to a lot of homeowners. This occurs when condominiums or larger living developments use a variety of services. Green industry companies are going to have to get better at what amounts to commercial work and be prepared for a very different future in many parts of the country.

One other important fact to consider is that in many places in the U.S., those people that are able to buy green industry services have already bought them, particularly lawn care. There isn't a large group of people lurking somewhere which is just now becoming aware of lawn care and landscaping as possible services. With rare exceptions, most people in the major market areas have been able to buy lawn care and landscaping for some time now. The future seems to be more and more focused on finding customers through either acquisition of other companies or going to multiple service.

Consumers are going to demand—and get—more and better communication from the companies with which they deal. If the companies can't communicate in a variety of situations there's almost no chance of survival.

In addition, the consumers are looking for less vendors, not more. Companies that diversify will have to do so well and be certain that the mix of services that are offered are ones that make sense to the consumer, not only to the owners of the company.

Finally, there is going to be competition for the service dollar. A lot of work needs to be done to figure out exactly what the competition is. At its base, the green industry needs to understand that it is not an essential service, but that without it the environment around us will fail to be as well as taken care of.

The competition is wide open for anyone who is willing to work hard enough to be professional. Looking at where the country is going to be in its lifestyle, what the government is likely to regulate, and what the consumers are going to demands gives the professional organization a way to plan for a strong future. □

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The beautiful main quadrangle of Central Missouri State campus presents a favorable first impression to prospective students and their parents.

LANDSCAPE MANAGER OF THE YEAR

Training his crew members to have confidence in their ability to keep a campus beautiful and pride in their work separates this year's contest winner from others.

by Terry McIver, associate editor

Vince Patterozzi, our 1990 Landscape Manager of the Year, decided to begin a career in the green industry after a drive through the Shawnee Hills region of southern Illinois.

As Patterozzi describes it, he was "captivated by the beauty" around him.

That appreciation for the great outdoors motivates Patterozzi every day as grounds manager for Central Missouri State University.

An employee of ServiceMaster, Patterozzi manages more than 1100 acres of university property, including 12 athletic fields, the Pertle Springs golf course, a 200-acre nature area, a small airport and the main campus. Said one judge, "Patterozzi's attention to detail is extraordinary given his limited budget."

Patterozzi's management skill is often admired by university President, Ed Elliot, and other university department heads impressed with the beauty of the university's campus and athletic fields.

Pat Daly, the university's physical plant manager, believes Patterozzi is a great teacher.

"His biggest challenge," says Daly, "is to educate the grounds personnel in proper grounds maintenance procedures, such as seeding, fertilizing, mowing, chemical application and irrigation installation and scheduling.

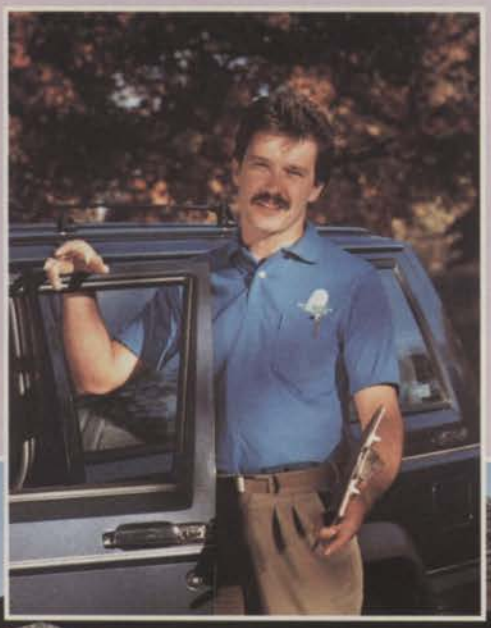
"Not only has Vince been noticed and rewarded for his activities by having a quality program," says Daly, "but from my perspective as manager, it also sets a pace for the other people in the physical plant to make things happen."

Daly says all front-line workers go through an intensive training program on all maintenance procedures. Patterozzi has scheduled more than 30 days of training time for his crew in 1990. Recent topics have been "Elements of Pruning," "Athletic Field Design and Maintenance," "Irrigation Training," and "The Safe Use of Herbicides," as well as programs in leadership and communication.

"If we can't communicate with each other," he says frankly, "absolutely nothing's going to get done."

continued on page 26

"My crew likes the way our Hustlers ride, but I love the way the Turbo Shredders mow."



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Circle No. 106 on Reader Inquiry Card

The Central Missouri State playing field is one of 12 athletic areas kept in top condition by Vince Patterozzi and his dedicated crew.

Patterozzi's concern for his crew extends beyond the type of work they do for the university. He wants to build their confidence for challenges and opportunity that might lie ahead.

"If everyone has a belief within himself that he could someday resign and easily get a job outside the university, then I've achieved my goal."

Patterozzi has established a quarterly overseeding program for the school's athletic fields, which are seeded with bermuda and ryegrass.

"In the summer, when activity is lower," Patterozzi notes, "the bermuda fills in well. Rye is overseeded in the fall and winter."

"In the past," Patterozzi explains, "people didn't understand that the research being done at universities was important when choosing turf seed." Patterozzi now watches the national trial results each year when choosing seed. Non-irrigated sloped areas are seeded with warm-season species.

Environmentally aware

While Patterozzi agrees that the hysteria over herbicide use is overdone, he believes that there is a negative perception lately toward any kind of spraying around the campus. For that reason he tries to keep the turf as dense as possible, thereby reducing spraying.

Vince Patterozzi: Fosters leadership and technical excellence among his staff at Central Missouri State University.

Patterozzi believes the two most pressing green industry issues are a shortage of qualified and motivated workers, and the need for further use of integrated pest management. The successful grounds manager of today, Patterozzi says, must possess a high degree of technical skills in areas such as chemical control product application, irrigation system know-how, and plant and seed selection.

"It is also important that people be multi-dimensional in their jobs, so that no task becomes overburdening," says Patterozzi. "But perhaps the most important thing a person must do is to develop communication and people skills, for if we do not have workers who believe and trust, we will never accomplish our goals."

A landscape management professional for 12 years, Patterozzi completed his undergraduate and graduate studies at Southern Illinois University, largely under the tutelage of Dr. Herb Portz, who Patterozzi says remains as one of his most admired role models.

The grounds at Leisure World have been planted with drought-tolerant plant life.

Runner-up: Managing a busy world

Milt Johns, first runner-up in our annual contest, is landscape director with Professional Community Management. He manages the landscaping and lawn care for Leisure World, a retirement community of 22,000 people in Laguna Hills, Calif.

Johns manages 750 acres of turf and shrubery, used by "very active adults, who play everything from checkers to lawn bowling."

A winner of a National Landscape Irrigation award, Johns recently completed a retrofit of the communities irrigation system to accommodate drought-tolerant plant life.

The retrofit involved splitting up stations, adding valves and controllers where necessary, and replacing and moving heads to accommodate the new design.

"It was very labor-intensive and costly in terms of trenching and material needs," says Johns. "Essentially we're working with the hardware we have in the ground. We're retrofitting to a point where we minimize water waste due to misting," or other water-wasting occurences.

Johns recently came up with a new method of collecting waste from job sites, resulting in a six-man staff reduction. The company now processes compost into mulch and soil amendments, while saving $200,000 per year in trash-related fees.

Work incentives

Like contest winner Vince Patterozzi, Johns believes in the positive effect work incentives have on the workers, smart enough to take advantage incentives. This past year, he devised an incentive-based productivity improvement plan.

"As we institute new mechanization, and as we increase services we provide," Johns explains, "we are obviously increasing our workload. We're trying to get our foremen to work more efficiently without adding staff. The ones able to do that and not compromise quality are evaluated and they are compensated accordingly."

Johns spends much of his time with the residents of Leisure World, "communicating why we do what we do, why we are changing some things, or how we can save them money and increase their services."

Johns meets with three committees and three boards each month, and uses audio-visual presentations, charts, graphs and financial information.

Safety, insurance big issues

Johns thinks worker safety and rising insurance costs are two of the significant challenges facing the green industry in the 1990s.

"We equip the men with as much safety equipment that we can find, including respirators and back supports. We mandate [safety equipment] use to be in front of any legislation or litigation."

"The successful grounds manager must have thorough education in ornamental horticulture or related, 'hands-on' experience,' in all areas of the green industry," says Johns, "as well as a 'forward-looking' attitude to move his business through the changing demands on the industry." □

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TURF AND THE ENVIRONMENT

The failure to match material and demand results in unnecessary nitrogen loss. To prevent leaching, landscapers need to balance plant need with the type and amount of nitrogen to be applied.

by W. Michael Sullivan, Ph.D., University of Rhode Island

Since the early 1970s, pesticide and fertilizer use on turf has steadily increased, thanks in part to an expanded lawn care industry. The development of the turfgrass management industry in the neighborhoods of America has created an avalanche of questions about the safety of lawn care practices.

The obvious nature of the service truck in suburbia and rampant "chemophobia" creates many questions. Peoples' fears, together with a simple cause-and-effect viewpoint, have resulted in many communities and states instituting lawn care regulations and laws. While these fears are often real, in many cases they are based more on unfounded beliefs, fueled by media coverage that alleges the adverse effects of a product or application. Such titillating stories with emotional pleas cut at the heart of all peoples.

Cause for concern

The green industry and the public should see eye-to-eye on many points:

- Notification is warranted where individuals may be impacted.
- Clear and concise responses should be given to many questions.
- Industry representatives should be aware of research documenting the potential hazards and safety of their activities.

Yet the public must acknowledge that the growth of turfgrass management, with its high dependence on agrichemicals, increases the possibility of off-site losses and subsequent environmental contamination. Turf care chemicals are often applied in close proximity to cart paths, walkways, driveways and sidewalks, increasing the potential for surface runoff.

Turfgrass, especially in residential situations, is frequently established on thin, coarse and low organic matter soil material and therefore has a high leaching potential.

Nitrogen a major component

Fertilizer nitrogen is the single largest chemical used in most turfgrass management programs. Turfgrass managers need greater understanding and ability to answer questions regarding environmental contamination.

Excessive nitrate-N in water supplies can cause animal and human health problems. Nitrate-N is a drinking water contaminant with a U.S. Drinking Water Standard of 10 mg/1 (ppm). Mammals consuming water with elevated N levels can have a reduced oxygen level in their blood stream. Infants, pregnant and nursing mothers, young children and the elderly are susceptible to harm.

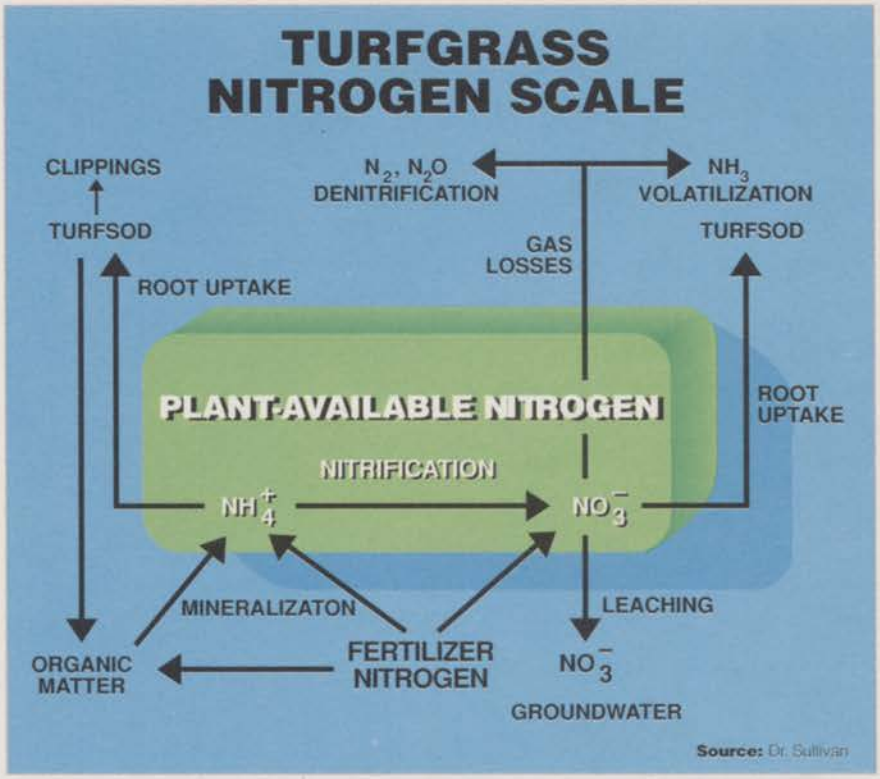
Nitrogen inputs to water, especially coastal bays and estruaries, have been found to accelerate eutrophication. Water quality degradation can result from N concentrations much less than the drinking water standard. Algae and water plants quickly respond to increased N with very rapid growth. This growth causes oxygen depletion which, in advanced stages, kills fish and plants resulting in strong odors and filling of the water body with decomposing materials.

Nitrogen movement

The first order of business in understanding the potential impact of N in the environment is to quickly review nitrogen movement in turf. Nitrogen readily changes form and cycles within the turfgrass. You can see the many places where N exists in Fig. 1.

The speed with which the fertilizer N transforms to nitrate N will vary with fertilizer form, soil temperature, and moisture. Quick-release materials like ammonium nitrate contain some nitrate at application but require little more than moist, warm soil and naturally

FIGURE 1.



occurring bacteria to transform all N to nitrate within several days.

Slow-release N

The slower release products are transformed to ammoniacal and nitrate-N in complex pathways. Generally the transformation involves overcoming either a physical barrier between the fertilizer and the environment or a requirement for a number of chemical and microbial transformations.

The traditional concerns of fertilizer selection should be expanded to include leaching potential. The information contained in Table 1 provides additional factors to consider when choosing one fertilizer form over another.

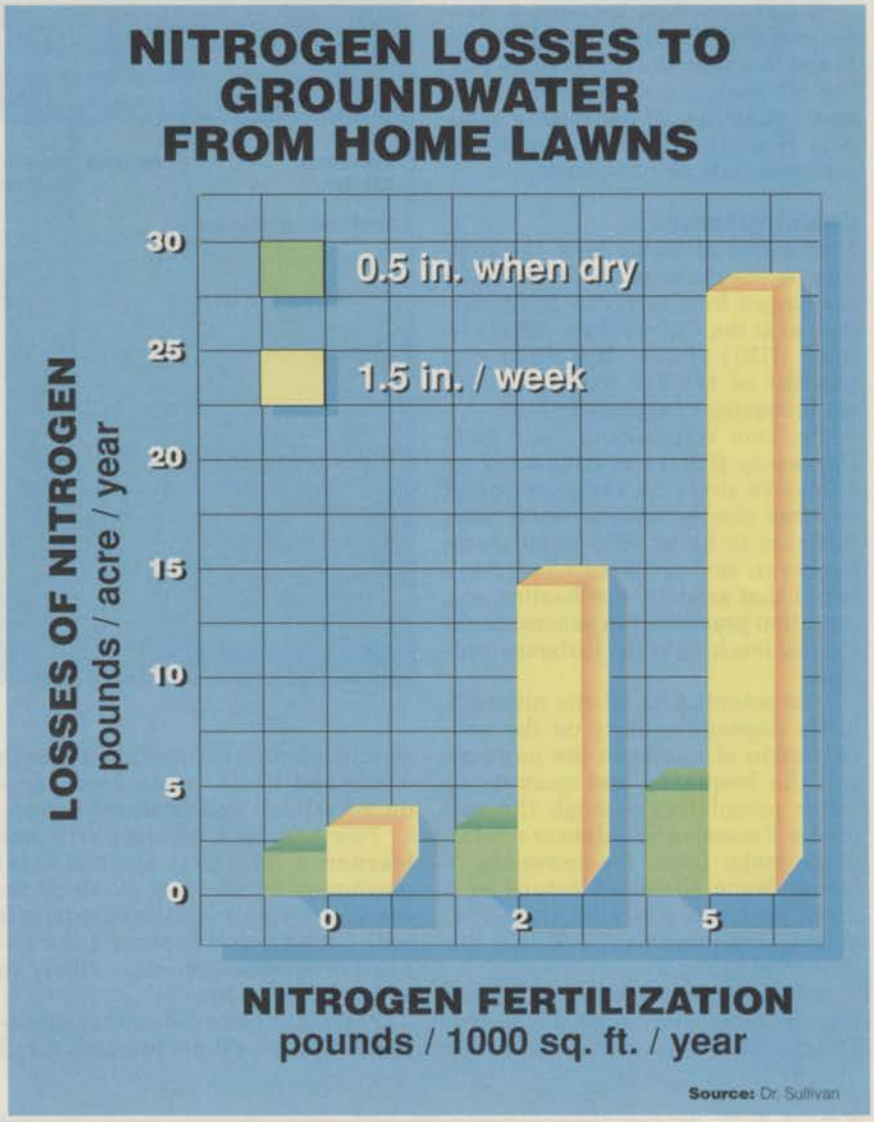
The leaching potential of a product is a result of the residual strength of the fertilizer N material and its nitrate evolution in relation to plant demand. Ammoniacal N can be absorbed by plants and microbes. It usually is not found in very great quantities because of almost immediate transformation to nitrate.

Mobile in soil

Regardless of the formulation applied, nitrate N that is not taken up by either growing plants or soil microorganisms moves readily with soil water. It is a mobile anion which moves rapidly from the root zone to groundwater.

The ideal match of turfgrass and fertilizer occurs when the fertilizer results in nitrate N production identical to plant demand. Nitrogen loss is minimized by having adequate N available during growth periods and little N available at rest or dormancy periods.

FIGURE 2.



Water management critical

Careful attention should be paid to soil water status at the time of, and immediately after, pesticide or fertilizer application.

To reduce potential of agrichemical losses, soil water should be maintained at a slight deficit. A small soil water deficit will not inhibit plant growth and will create a storage buffer to accommodate unanticipated heavy rainfall or excessive irrigation practice.

An irrigation program designed to maintain soil moisture at around 85 percent of field capacity would provide a modest storage capacity. In contrast, a turfgrass rootzone maintained at field capacity is a prime candidate to have all nitrate-N and other fully soluble and mobile elements readily flushed from it.

Any regular flushing of a heavily loaded root zone thus leads to lost fertilizer, lost investment and a high potential for environmental contamination.

—Dr. Sullivan□

Earlier this year Roch Gaussoin, Ph.D., in his article, "Early-season Fertilization" (LANDSCAPE MANAGEMENT, February, 1990) offered some recommendations on managing both cool- and warm-season turfgrass. His advice to match product, growth period and turfgrass needs was sound.

Dr. Richard Hull at the University of Rhode Island has conducted work that reinforces Dr. Gaussoin's comments. His project documents how different fertilizer materials can result in greatly different losses and that it's essential to consider balancing plant need and product.

Less growth, less N

Turfgrass that is not growing vigorously has reduced N need. The data in Table 2 clearly shows how the failure to match material and demand results in unnecessary nitrogen loss. The losses are expensive and attribut-

able to excess nitrate supply in relation to plant demand.

If turf condition indicates a need for nitrogen, a program should be followed that provides for N needs. During off-peak growth periods, using small quantities of the readily available N sources that are rapidly absorbed should be considered.

Chemical losses

Percolation of water from the rootzone is the major pathway for water discharged from turfgrass. Work conducted at the University of Rhode Island (URI) shows less than one percent of rainfall and irrigation water leaving turfgrass as runoff.

Dr. Tom Watschke of Penn State University (PSU) has conducted an extensive study on turfgrass runoff and has clearly shown runoff from turfgrass to be of little importance. However, several researchers have found that selected fertilization and irrigation practices can generate substantial leaching of the turfgrass rootzone.

The potential for off-site nitrate-N losses depends entirely on the concentration of nitrate in the rootzone and the frequency and quantity of water percolating through the soil profile. Excessive irrigation or rainfall is the major factor for increasing N losses. Some N-related results of a three year URI study on irrigation, chemical management and turf are contained in Fig. 2.

Irrigation management is a great way to dramatically reduce N losses. The careful management of soil water should take into account plant growth needs and likely water needs, predicted rainfall and fertilizer history.

The research community has learned a lot about agrichemcial movement by studying N. Many researchers and monitoring projects have focused on N because it is inexpensive to measure, more likely to move and more heavily

Pesticides have different degradation pathways, affinity to attach to soil or organic matter, movement pathways and absorption characteristics by plants or microbes. A number of studies involving pesticide percolation, particularly with those thought to be highly mobile, have shown little to be concerned with.

TABLE 1.

Classification, burn potential, low temperature response and residential effect of common turfgrass nitrogen sources.

Fertilizer choice	N content %	Burn potential	Leaching potential	Low Temp Response	Residual Effect
Synthetic Inorganic					
Ammonium nitrate	34	High	High	Rapid	Short
Calcium nitrate	16	Very High	High	Rapid	Short
Ammonium sulfate	21	Very High	Mod. High	Rapid	Short
Synthetic Organic					
Urea	45	High	Mod. Low	Rapid	Short
Urea solutions	30	High	Mod. Low	Rapid	Short
Sulfer coated urea	35	Low	Low	Moderate	Moderate
Isobutylidene diurea	30	Low	Mod. Low	Moderate	Moderate
Methylene ureas	42	Low	Low	Low	M-Long
Ureaformaldehyde	30	Low	Low	Low	Long
Natural Organic					
Activated sewage sludge	6	Very Low	Very Low	Very Low	Long

Source: Dr Sullivan

Encouraging results

Recent work with 2,4-D and dicamba at PSU and the URI has shown only limited pesticide movement. Even rain or irrigation events which produced runoff or percolate immediately after application moved very small amount of product.

PSU efforts showed that only 1 to 2 percent of 2,4-D and dicamba moved if excessive rain or irrigation occurred shortly after application. Research at URI and a number of other locations identifies only very limited movement in percolate water.

The URI work followed the movement of 2,4-D and dicamba applied at rates up to three times the normal application. Over 90 percent of all water samples leaving plots with the higher pesticide rates contained no pesticide or less than 1 part per billion of contamination. Further work has shown that healthy turfgrass creates an environment ideal for the retention and degradation of these pesticides. **LM**

TABLE 2.

Total nitrogen loss due to leaching during the winter-spring season following a late fall application

GRASS	FERTILIZER*	NITROGEN LEACHED lbs/ 1000 FT^2	% lost
Kentucky bluegrass	NH_4NO_3	2.7	54.1
	Urea	0.7	13.6
	UF	o.2	3.8
Chewings fescue	NH_4NO_3	2.3	45.4
	Urea	1.7	33.1
	UF	<0.1	0.8
Perenial ryegrass	NH_4NO_3	2.0	40.0
	Urea	1.0	20.7
	UF	0.1	2.3

*N Applied at 5lbs/ 1000 FT on 16 November 1988. Hull 1989

Source: Dr Sullivan

W. Michael Sullivan is an associate professor of plant sciences at the University of Rhode Island. He is also extension agronomist and director of analytical services for Cooperative Extension.

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Circle No. 295 on Reader Inquiry Card

Superintendent Brian Heywood opens his gear drive and impact rotors before using a 185 or 205 cfm air compressor to blow out all the water.

IRRIGATION EQUIPMENT: AVOIDING WINTER DAMAGE

Three superintendents suggest a few basic steps to prevent winter damage to irrigation equipment.

by David Ferron, Rain Bird Golf Division

Your irrigation system represents a substantial investment of money to maintain quality turfgrass, so don't let winter's extreme temperatures damage its pipes.

Winter weather can be unpredictable. In many parts of the country, temperatures will sink low enough to warrant draining or blowing out all the water in the pipe network to prevent cracking. In the coldest areas, the ground may freeze from three to four feet deep. Superintendents must take the maximum precautions for their area.

Snow cover during much of the winter season will help keep the ground from freezing very deep, but most superintendents still blow out the pipe network since it takes less time and expense than repairs the following spring.

Golf courses in transition zones must keep water in their pipes to maintain soil moisture during some of the dry winter months. Superintendents there are taking a chance and can expect some damage in the coldest winters.

Jim Perrin, superintendent of Cameron Park (Calif.) Country Club, does not blow his irrigation system out and may have damage if the winter temperatures dip too low, like in 1988 when he lost two brass gate valves on his back flow preventer.

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If you are new to the area, ask nearby superintendents what precautions they take. Experience is the best source of information.

Two methods are used to remove water from the irrigation system: via drains installed in the pipe network or by blowing out the water with an air compressor.

Draining downhill works

Draining will work on some small irrigation systems if the pipe is set with a slight downhill grade. Draining may leave pockets of water on large systems, which could cause problems. Blowing the water out of the pipe with a large air compressor is the most thorough method used today.

Bo Cichuniec, superintendent of The Country Club at Castle Pines, Castle Rock, Colo., says winter damage is only a problem when the winterization process is not done correctly.

Cichuniec may need to water the greens and tees in winter since the ground does not maintain any snow cover. When the irrigation system was designed, a secondary main line was added two to three feet deeper than the primary main line, allowing it to remain charged throughout the year.

Quick-couplers are attached along the fairways and around each green and tee. A stop-and-waste valve is opened manually to charge the quick-coupler and turned off after each use. The stop-and-waste has a drain hole to allow the water to escape from the four-foot nipple.

Cichuniec says his primary problem is when a gate valve leaks water back into the shallower system. Golf course personnel must be sure to close all the gate valves tightly to prevent any damage.

Cichuniec uses a 750 cubic feet per minute (cfm) air compressor to blow out the irrigation pipe network. He says that it can take up to two days to complete the job. He attaches the air compressor to a quick-coupler at the pump station and pushes the water out from there.

Cichuniec is lucky that most of his golf course lies on the side of a mountain and the slope is downhill from the pump station. The main line connection to the pump is to a 14-inch pipe that holds a very large volume of water. His sprinklers are valve-in-head models and he's able to use the controller to turn on each rotor, keeping it on until air begins to come out the nozzle.

Reduce air friction

It's important not to allow the air to leave the rotor for a long period since air causes friction and heat can build up easily. Cichuniec says he has heard of pipe melting from air moving through at high velocity, but he hasn't had any such trouble.

Brian Heywood, superintendent at Jackson Hole Golf and Tennis Club, Jackson, Wyo., begins winterizing his system by draining the pipe in the lower areas. He then rents a 185 or 205 cfm compressor to blow out the rest of the water, starting from the higher end of the course and working downhill through the valves. He adds it may take five days to do a thorough job.

During most of the winter season the course has a good three feet of snow cover, which helps keep the lines open and safe from damage, even though air temperatures are well below zero during the coldest months of the season.

Activate all rotors

The crew at Jackson Hole turns on every rotor. Heywood has both gear drive and impact rotors on his course. He notes that gear drive rotors require more air to get them to turn on and suggests turning them on manually to insure water removal.

John Alexander, superintendent at Bend (Ore.) Country Club, waits as long as he can before blowing his system out to prevent the soil from drying out. He starts from the highest points on the course and uses the clock to turn on the sprinklers.

Alexander emphasizes that it is important not to let the air leave the sprinkler for too long a time. In the past he has melted a two-inch brass valve. He also prefers a smaller compressor since a 650 to 750 cfm model melted some four-inch pipe and blew sprinklers out of the ground.

Compressors vary in size from small 10 to 15 cfm to the very large 750 cfm size. The size you choose will depend on the amount of water you are trying to remove. The volume of water will depend on the pipe size that makes up the hydraulic network of your irrigation system.

What compressor size?

Alexander prefers using a smaller compressor and going through the system a couple times to be sure all the water is removed.

Cichuniec says that it takes two full days to get all the water out of his 14-inch mainline leaving the pump house. While the air easily pushes the water out of the top half section of pipe, it takes a little extra effort to get the rest out.

Though there are no specific rules of thumb when it comes to choosing an air compressor, the best way is to start small and work your way up.

The most important element to remember when removing water from your irrigation system is to begin releasing the water at the highest point on the golf course and work down from there. Use the controller to electrically turn on the sprinklers or turn each on manually, and be sure not to let the air leave the rotor for a very long time. **LM**

Wyoming's three feet of snow cover is probably enough to protect irrigation lines from freezing and cracking, but Heywood takes no chances.

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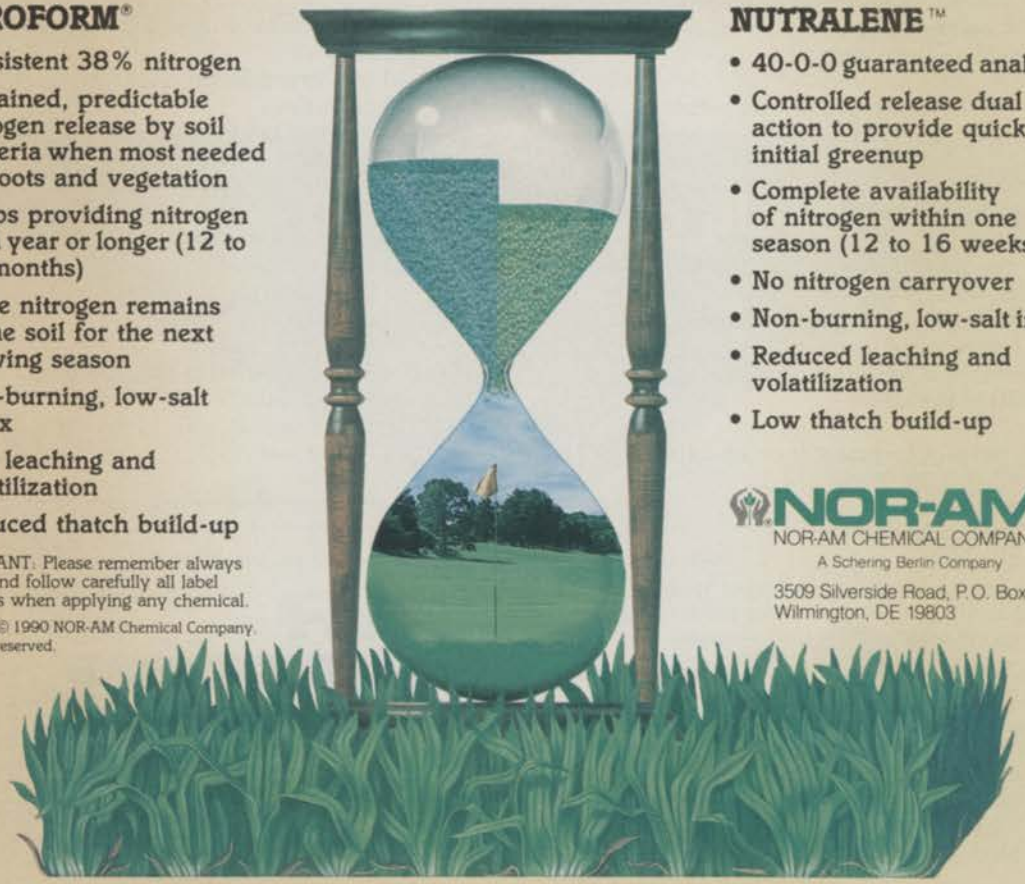

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QUICKIE-QUIZ

Soils and their effects on turf growth

Soil Texture Classification

Soil separate	*Diameter mm*	*Particles/gm number*	*Surface area in 1g. sq. cm*
stone	over 25	—	—
coarse gravel	25-5	1	—
fine gravel	5-2	30	—
very coarse sand	2-1	90	11
coarse sand	10-.5	720	23
medium sand	.5-.25	5,700	45
fine sand	.25-.1	46,000	91
very fine sand	.10-.05	722,000	227
silt	.05-.002	5,776,000	454
clay	below .002	90,260,853,000	8,000,000

1. The number of natural soil types identified in United States is more than:
a) 70
b) 700
c) 7,000
d) 70,000

2. Peat is a preferred soil additive because:
a) it improves nutrient retention
b) it deteriorates slowly
c) both of the above

3. The ideal soil pH for growing plants is:
a) neutral
b) slightly acidic
c) slightly alkaline
d) strongly alkaline

4. Besides neutralizing soil acidity, lime applications:
a) add calcium and magnesium
b) increase compaction
c) decrease soil salinity
d) all of the above

5. Soil compaction under turf can extend as deep as:
a) one inch
b) four inches
c) one foot

6. Most fertilizers tend to make soils:
a) more acid
b) more alkaline
c) neither

7. Generally, saline soils develop because of:
a) adapted plant species
b) poor drainage
c) excessive traffic
d) all of the above

8. Most sands are composed primarily of:
a) mica
b) feldspar
c) quartz

9. Low oxygen supply through the soil to the plant can be caused by:
a) compaction
b) overwatering
c) both

10. The dark color of topsoil is caused by the presence of:
a) earthworm casings
b) potassium
c) mineral matter
d) moisture

11. In areas where earthworms are prevalent, rainfall penetrates the soil:
a) more rapidly
b) less rapidly
c) neither

12. Thatch accumulation is favored in:
a) clayey soil
b) sandy soil
c) loamy soil

Source:

Turf Managers' Handbook
COMPREHENSIVE PRACTICAL INSTRUCTION FOR ALL TURF PROFESSIONALS

ANSWERS:

1.c; 2.c; 3.b; 4.a; 5.b; 6.a; 7.b; 8.c; 9.c; 10.c; 11.a; 12.a

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Sub-irrigation system suits 49ers' turf pro

Hey, call it coincidence. But Rich Genoff, sports turf manager of the San Francisco 49ers, points out the facts: "I came here in '88," he says with a broad grin, "and the 49ers have won the Super Bowl ever since."

Genoff will concede that just maybe the 49ers could have pulled it off without him, but there's no more of a 49er at heart than he.

In fact, Genoff spends more time on the practice fields at the team's new Marie P. DeBartolo Training Camp in Santa Clara, Calif., than do the players. As the only full-time groundskeeper, he can be found there year-round, at practically any hour of the day or night.

"It's my baby," he says of the 4.5 acres of grass. "I do everything but tuck it in and kiss it goodnight. And it doesn't bother me to put in a 16-hour day if that's what it takes to keep this turf top-notch all the time. The condition of the practice facility is real important to me and to the team. The better it looks, the better they feel."

Diseases are warded off the champion 49ers' practice fields by Rich Genoff.

The Warren's A34 bluegrass turf sits on 16 inches of sub-irrigated sand over a plastic barrier. The field also has fully automated overhead irrigation, using 690 sprinkler heads and a PSI pumping station.

"I use the overhead irrigation for seeding, to water in chemicals, or to prime the field when it gets dry," Genoff explains, "then I sub-irrigate for about an hour-and-a-half, and that lasts me up to two weeks.

"The sub-irrigation is great. I can control it from a panel in my office, and don't have to worry about clocks going off or heads sticking open. I could water the field while the team is playing and they'd never know it."

The system also conserves water, he explains, because he's not losing anything to evaporation. With water in short supply throughout California, that's an important benefit.

Coming from a golf course background, Genoff is used to replacing divots. "But I've never seen divots like we take out here," he laughs. "These are big guys and they are fast. When you get 110 of them here for a mini-camp, all trying to impress the coaches, they really get into it. And when they stop and make a cut, the turf goes flying. But I would rather they take a divot than have that grass lock up and injure a knee. It means the turf is doing exactly what it's supposed to do."

Genoff acknowledges that turf diseases are a problem, just as they are a problem on most high-maintenance turf.

"*Poa annua* is my worst enemy, like it is with any turf man who wants a nice stand of bluegrass," Genoff states. But he gets excellent results with Chipco Ronstar G brand herbicide as a pre-emergent. He applies the material in late March and again in September. "It does a real good job keeping the lawns weed-free and that helps me devote more time to the playing fields."

When the practice field was first laid down, Genoff used Chipco Ronstar on it twice for year-long pre-emergence control. "It performed very well," he reports, "but because of the heavy use of the practice turf and the need to frequently re-seed, it's hard to schedule in a pre-emergence application. I've had to go to spot sprays on the playing turf. It's a constant battle, but I haven't found anything that

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Circle No. 125 on Reader Inquiry Card

SYSTEM *from page 40*

works as well as Ronstar for poa."

Genoff uses Subdue and Chipco Aliette brand fungicides for pythium control. Subdue provides control through root uptake while Aliette provides quick foliar systemic control as well as root uptake. He keeps Aliette on hand because its low toxicity and quick action allow him to respond fast to a disease problem. "If I see that the weather is getting up there in the 90s or 100s and the nights are staying about 80 percent humidity, then I'm going to be ready to go with Aliette."

The sub-surface irrigation system used by Rick Genoff saves water, since none is lost to evaporation.

for rhizoctonia and helminthosporium control, Genoff uses Chipco 26019 brand fungicide. "All of these materials will perform well for you if you follow the label and treat them with respect. I have to be extra cautious because of the heavy use of the facility by the athletes. My fertilizers and granular pesticides are applied in the evening because they need to be watered in, and almost all of my spraying is done at about 4 or 5 o'clock in the morning. That way, the vegetation is dry and any odor is gone long before the players are out here."

If you get the impression that Genoff takes a lot of pride in his work, you're right. "There's only one world champion and only one (49ers owner) Eddie DeBartolo," he notes. "Both are totally committed to being the best, and it rubs off on you. No one connected with the team gets left out. When the team wins, we all win." **LM**

Try rotating fields to save turf

In everything he does, Rich Genoff keeps the players' needs foremost in his mind. "I adjust to the team's needs; they don't adjust to mine," he points out. At the same time, he says the coaches and players are cooperative. "If I rope an area off, they're pretty good about staying out. It's a good working relationship."

Genoff spends the winter months getting the fields ready for spring minicamps. He then has to get the fields back into prime condition prior to the beginning of fall practice. "But once the season starts," he says, "the fields are to practice on, not to look at. I have the capability of making five different configurations of the fields, running two fields north and south, and two fields east and west. Then, if we make it to the playoffs, I go out and find the best turf, pull the sprinkler heads and put in a practice field. By the end of the season, the fields have taken a real beating, but they will still be playable because of the rotations." □

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SEE US AT BOOTH #701

Rate of N release varies by fertilizer, soil

by Don Taylor, Ph.D, Univ. of Wisconsin

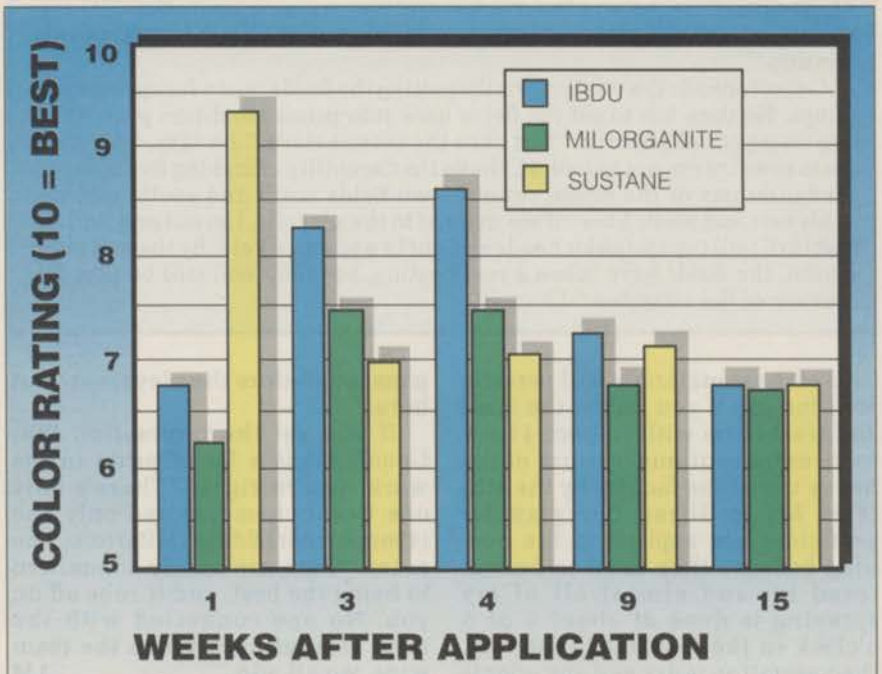

Figure 2. Average color ratings at three locations following June 9 fertilization. Rating scale was 1 to 10 with 10 best.

Source: Dr. Taylor

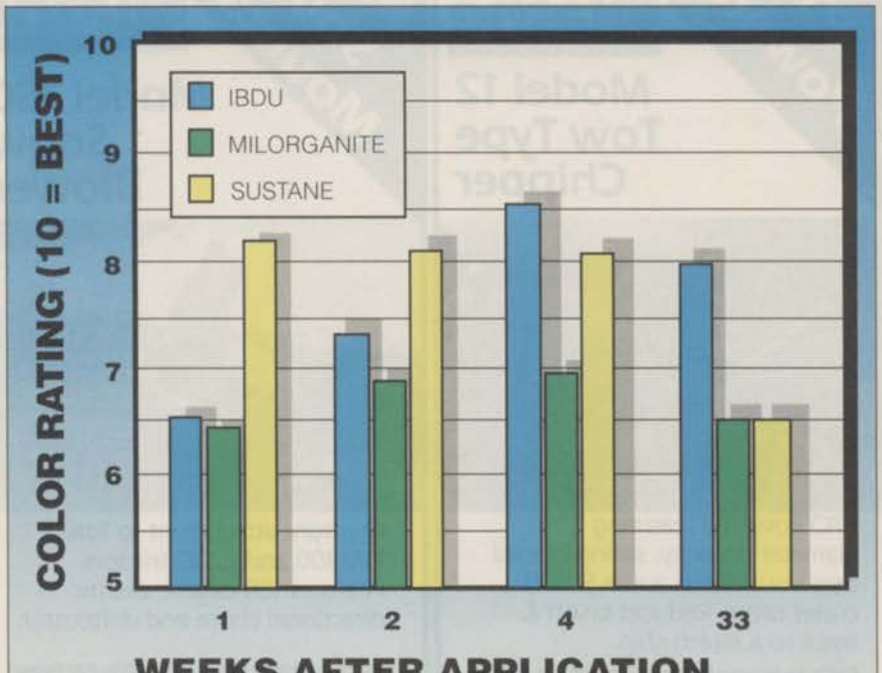

Figure 3. Average color ratings at three locations following September 27 fertilizer application. The 33 week color rating was May 19 the following year. Rating scale was 1 to 10 with 10 best.

Source: Dr. Taylor

Slow-release nitrogen (N) fertilizers are often used on golf greens, athletic fields, and other turfgrass areas, even though they're more expensive than quick-release types. Longer turf response and low burn potential are reasons for their popularity.

When choosing and using slow-release fertilizers, remember that release characteristics can vary dramatically with different materials and with different conditions.

Some slow-release fertilizers, such as sulfur-coated urea and Osmocote, are a quick-release N like urea, coated with a material that must be penetrated or broken before the N is released. While breakdown of the coating is supposed to result from micro-organism activity, physical breakage from traffic or rough handling can also increase the rate of N release.

One slow-release N source, IBDU, releases N slowly because the module into which the N is bound dissolves very slowly in soil water. In the case of IBDU, the rate of N release depends principally on the amount of water in the soil.

The moisture factor

Other slow-release forms of N, such as UF and Milorganite, release N slowly because micro-organisms must break down the N-containing molecules before the N can be taken up by the turfgrass plants. The release rate depends on how easily the molecules are broken down on the level of micro-organism activity.

During cool or very dry conditions, N release will be minimal because micro-organism activity is limited.

The point to remember is, the rate of N release (and thus the length of time that turf responds to a slow-release fertilizer application) can vary dramatically with fertilizer properties and existing soil conditions.

The results of some experiments in Minnesota and Wisconsin demonstrate this fact well.

Test procedures

In the experiments, the fertilizers IBDU, Milorganite, and Sustane (a natural organic fertilizer derived from composted agricultural wastes) were applied and evaluated at three golf course putting greens. The fertil-

continued on page 44

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Circle No. 126 on Reader Inquiry Card

UPDATE *from page 42*

izers were applied at a rate of 2 lb. N/1000 sq. ft. on June 9 and September 27, 1988. Each fertilizer treatment was replicated three times on each green.

Following the June 9 application, a color response on the Sustane plots was evident within several days at all three locations, the most dramatic of which is shown in Fig. 1. Subsequent color ratings indicated the response to Sustane was of short duration (Fig.2).

Three weeks after the fertilizer application color ratings of the Sustane plots had dropped while IBDU plots were just coming to a peak. Four weeks after application IBDU plots were at their peak in terms of visual color.

Analysis of clippings taken four weeks after fertilizer applications showed that clippings from IBDU plots had higher N content (averaging 5.1 percent N) than clippings from either Milorganite plots (4.4 percent N) or Sustane plots (4.3 percent N).

Unlike Sustane or IBDU plots, the Milorganite plots never did show a period of substantial visible response to N being released, perhaps due to a gradual low level of N release throughout the the experiment. After two months all the plots had rather low visual ratings and the turf appeared to be in need of N.

Visual response

Following the September 27 fertilizer application, there was again a quick visual response to the Sustane plots (see Fig. 3). The response to Sustane did not fade as quickly as it had following the June application and turf on Sustane plots continued to have high color ratings up to four weeks after fertilizer application.

Turf color can indicate the need for extra N.

The longer residual response to Sustane may have been due to the cool temperatures of October, which reduced the microbial activity and thus lengthened the period of release of N from the Sustane fertilizer.

Visual response to IBDU again peaked about four weeks after application. Color ratings taken the following May (33 weeks after fertilizer application) demonstrated a definite beneficial color response to IBDU the spring following a fall application of fertilizer. At that time, response to Milorganite and Sustane applied the previous September had disappeared.

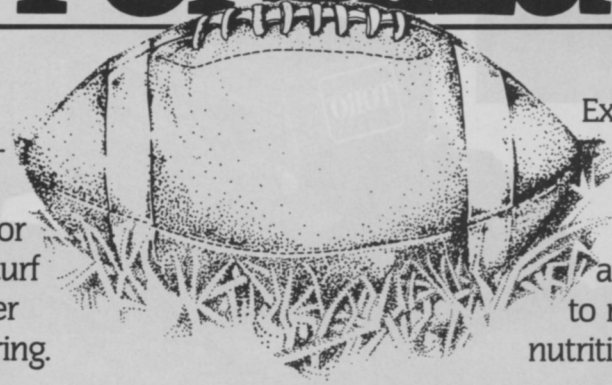
Different reactions

These experiments show slow-release N fertilizers react dramatically different in terms of turf response and residual time. Even a single slow-release fertilizer can have differing results at a different locations or at different times of the year for a single location. Consequently, in choosing slow-release fertilizers and in developing a turf fertility plan, it is best to test how the turf at your location responds to different fertilizers.

By putting out your own test plots and watching the response to several to several different fertilizers, you will likely achieve better results than by using general recommendations determined elsewhere.

In implementing an N fertility program, turf color can be an excellent indicator of the need for additional N. **LM**

Fall Fertilization



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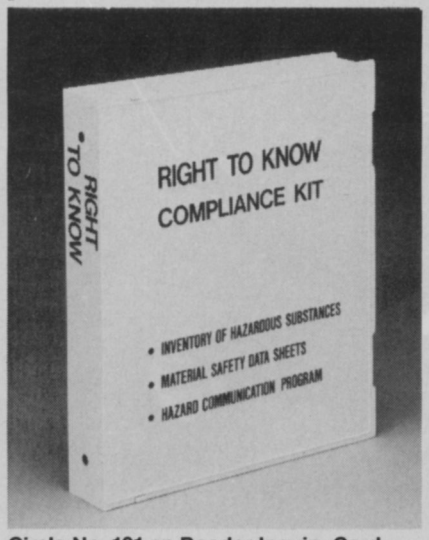
Circle No. 112 on Reader Inquiry Card

Compliance kit keeps chemical data handy

The Right-to-Know Compliance Kit was developed by Direct Safety Co. for the employer who buys, sells or uses hazardous substances.

The kit contains the OSHA 1910.1200 ruling which is required to be made available to employees. A special index form can list up to 40 hazardous substances and work areas in which they are located. The kit includes a form letter for requesting Material Safety Data Sheets, plus a written hazard communication program which states company objectives and plans regarding the protection of employees, and a sample employee training lesson with completion certification forms.

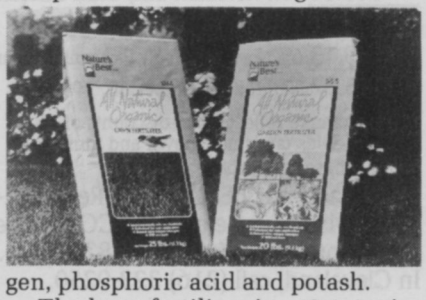


Circle No. 191 on Reader Inquiry Card

Organic fertilizers contain water insoluble nitrogen

Koos, Inc. has introduced two all-natural organic fertilizers for lawns and gardens.

"Nature's Best" fertilizers are produced as homogenous mixes, and are composed of all-natural organic nitrogen, phosphoric acid and potash.



The lawn fertilizer is a 10-1-4 mixture, containing 10 percent nitrogen, one percent phosphoric acid and four percent soluble potash. The garden mix is a 5-5-5 combination.

Koos says both products contain 80 percent water insoluble nitrogen that slowly releases nutrients into the soil. Because of the slow-release process, the granulized fertilizers are non-burning and do not require watering in.

The lawn fertilizer nutrients are derived from bone phosphate, sunflower seed hull ash and natural animal organic ammoniates, which contribute to better root development. The garden blend yields similar results, and is derived from bone phosphate, hydrolyzed feather meal and sunflower seed hull ash.

Circle No. 192 on Reader Inquiry Card

New spreader design features big capacity

True Temper's new Cyclone Commercial Broadcast Spreader, Model CB5000, is a large capacity spreader with state-of-the-art features providing productivity enhancements for the lawn care professional.

"The new Cyclone Spreader has been designed to make lawn care easier and more productive," says Jeff Lundeen, True Temper product manager.

Lundeen says the CB5000 is easy to use, and features an ergonomically-designed handle to reduce operator fatigue. Handle and ground supports both adjust according to user preference. The spreader has an adjustable feed gate for even spreading. A semi-permanent, clear acrylic hopper cover allows the user to fill the hopper without removing the cover.

Circle No. 193 on Reader Inquiry Card

Tractor mowers offer choice of steering

Kubota's new G-Series of tractor-type grass cutters come with standard steering or a new four-wheel steering system.

Kubota says the new 4WS system allows for smoother, tighter turning than a conventional garden tractor and is ideal for mowing around trees and obstacles.

The 4WS system allows for an uncut circle of 1.6 feet.

The G1800 and G1900 are equipped with Kubota's dependable liquid-cooled diesel engine, providing 16 and 18 hp.

Gasoline-power enthusiasts can try the G2000, which features a 21 hp, liquid-cooled engine built from a diesel engine block.

A cruise control feature on the G-series mowers allows the operator to steer without using the pedal.

Circle No. 194 on Reader Inquiry Card

Versatile dump body meets landscaper needs

America's Body Company has designed the Landmaster dump body with many important multi-purpose vehicle features.

Landmaster is a dump body with a heavy-duty tailgate and standard adjustable material chute, with 35 cubic feet of storage space for tools, supplies and materials. The Landmaster dump body has a 2.3 cubic yard bed constructed of rust-resistant, galvanized steel.

Landmaster performs well in tight quarters, whether plowing snow in a small parking lot or loading and unloading equipment in a congested commercial or residential area.

America's Body Company has offices in Oakwood Village, Ohio; Co-

lumbus, Ohio; Clinton, Md; and Nanticoke, Pa.

Circle No. 195 on Reader Inquiry Card

Walk-along trencher ideal for landscape specialists

The Model 520 is a low-cost, walk-along disc trencher from the Charles Machine Works.

The 5 hp unit is a light-duty trencher designed for trencher contractors, rental yards and landscape specialists.

The Model 520 is built with a tubular steel frame. A single front wheel makes turning and maneuvering easy. Two rear wheels provide stability.

The gasoline engine has an easy-pulling recoil start. Power to the trenching disc is direct, without chains, belts or pulleys.

An integral friction clutch protects the engine from shock loads.

Circle No. 196 on Reader Inquiry Card

Lightning detector sounds an early weather warning

Lightning detectors from Airborne Research Associates predict lightning events up to 20 minutes before they occur, according to the company.

The M-01 Optical Detectors have been used for the USGA, PGA Tour, PGA Senior Tour, LPGA and numerous other golf organizations and clubs for evaluation.

The detectors pinpoint "intracloud" lightning, a precursor to cloud-to-ground lightning strikes.

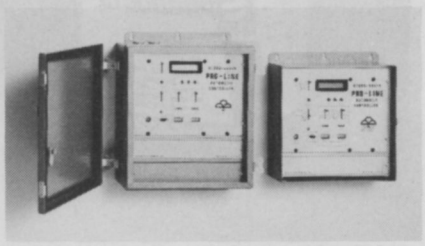
The ARA P-1 Atmospheric Potential Probe measures the earth's electric field and is interfaced to an IBM PC. If a thunderstorm is within five miles, it will be detected, since, according to Airborne, it is impossible to have lightning without high electric fields.

Circle No. 197 on Reader Inquiry Card

Irrigation controllers have water-saving features

Hydro-Electronics now offers the Hydro-Saver Pro-Line of 8-, 12-, and 16-station dual program microprocessor controllers.

Pro-Line features include a 365-day, built-in calendar for odd/even water restrictions and other com-



plex watering schedules. Dual programming and drip irrigation are available, as well as three-a-day starting times.

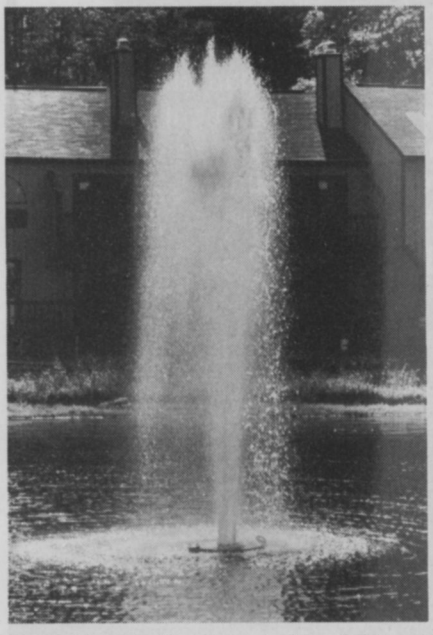
Other features include: flexible zone timing; water budgeting; rain-sensor bypass; advance button for semi-automatic operation; and manual override for watering one zone continuously without disturbing automatic operation.

Circle No. 198 on Reader Inquiry Card

New 10 hp aerator sprays 40-feet high

In response to market demand, Barebo, Inc. has added a 10-hp rocket model to its line of Otterbein floating surface spray mechanical aerators.

The new, computer-aided design aerator achieves a spray height of 40



feet. The easily detachable diffuser plate makes it possible to clean the unit without removing it from the water.

Barebo says all Otterbein aerators are complete turn-key operations, and require no external or costly plumbing fixtures.

Circle No. 199 on Reader Inquiry Card

Truck bed attachment makes loading a breeze

Landscapers, gardeners and horticulturists can now load and unload plants, tools and supplies from truck beds faster and easier than ever with the help of the SlideMaster payload attachment.

The SlideMaster three-rail telescoping cargo handling system instantly creates a convenient pull-out platform on any size pickup truck.

Developed by Innovative Indus-

tries of Madison, Wisc., SlideMaster instantly makes all contents in every corner on the movable bed easier to reach.

Circle No. 201 on Reader Inquiry Card

Pound-In Edging system for well-manicured look

Pound-in Edging, a new landscaping accessory from Heartland Products, saves time and energy, while giving all projects an extra well-manicured look.

Pound-In Edging can be used to border trees, shrubs, and flower beds. There are no trenches to dig. Pieces lock together so there are no unsightly gaps. Even on sloped areas and around curves, Pound-in Edging will fit together easily and provide a uniform border.

Heartland says Pound-In-Edging can be virtually invisible when tapped into place just below the grass cutting level.

Circle No. 202 on Reader Inquiry Card

continued on page 50

PRODUCTS *from page 49*

Newest models appear in full-color brochure

Encore Manufacturing Company's complete line of commercial turf equipment is featured in a new eight-page, full-color Pro-Line brochure.

The publication includes model descriptions, photographs and specifications on Encore's Pro-Line of 32-inch to 60-inch mowers, as well as blowers, Power-Thatch and Power-Slice.

Encore's riding sulky and grass catcher accessories are also included.

Important features are given special attention, including the Pro mowers' double-V band belt to eliminate slippage.

This brochure is the first to focus on the complete Pro-Line of equipment and accessories. Product feature information and a price quote sheet make it a handy reference tool for both dealers and lawn maintenance professionals.

Circle No. 203 on Reader Inquiry Card

Fertilizer line adds high level N-P-K mix

Growth Products rounds out its Liquid Professional Fertilizer Line with Hi-Kal (15-0-10) and Hi-Kal++ 15-2-10.

The company says both products provide high levels of potassium with no chlorides; 40 percent slow-release nitrogen and iron for fall fertilization programs of turf, trees and ornamentals.

There is no mixing or special agitation needed with Hi-Kal or Hi-Kal++, and the products are ideal for root injection or foliar feed.

Circle No. 204 on Reader Inquiry Card

Mower features designed for operator benefit

Exmark's 21-inch self-propelled and walk-behind mowers are powered by a 4 hp Briggs and Stratton engine, and feature variable speed control and differential action for easy maneuverability on curves and hillsides.

Exmark says there is also no reverse drag on the 21-inch self-propelled model, so backing is easy.

The mowers combine complete engineered design with operator convenience features, for a consistant cut and easy operation.

Exmark mowers are backed by rigorous testing and exacting production

procedures to insure high-quality products that deliver years of low-maintenance operation.

Circle No. 205 on Reader Inquiry Card

Videotape shows the way with injection equipment

Aquatrols is offering a videotape entitled "Selecting and Installing Aquatrols Irrigation Injection Equipment."

The video offers step-by-step instructions on the installation and calibration of the Little Squirt and the

P.P.M. Unit injection pumps.

"Increasingly, turf managers are recognizing the benefits of treating irrigation water with soil wetting agents to improve penetration, uniform wetting and increase water use efficiency," says

continued on page 52

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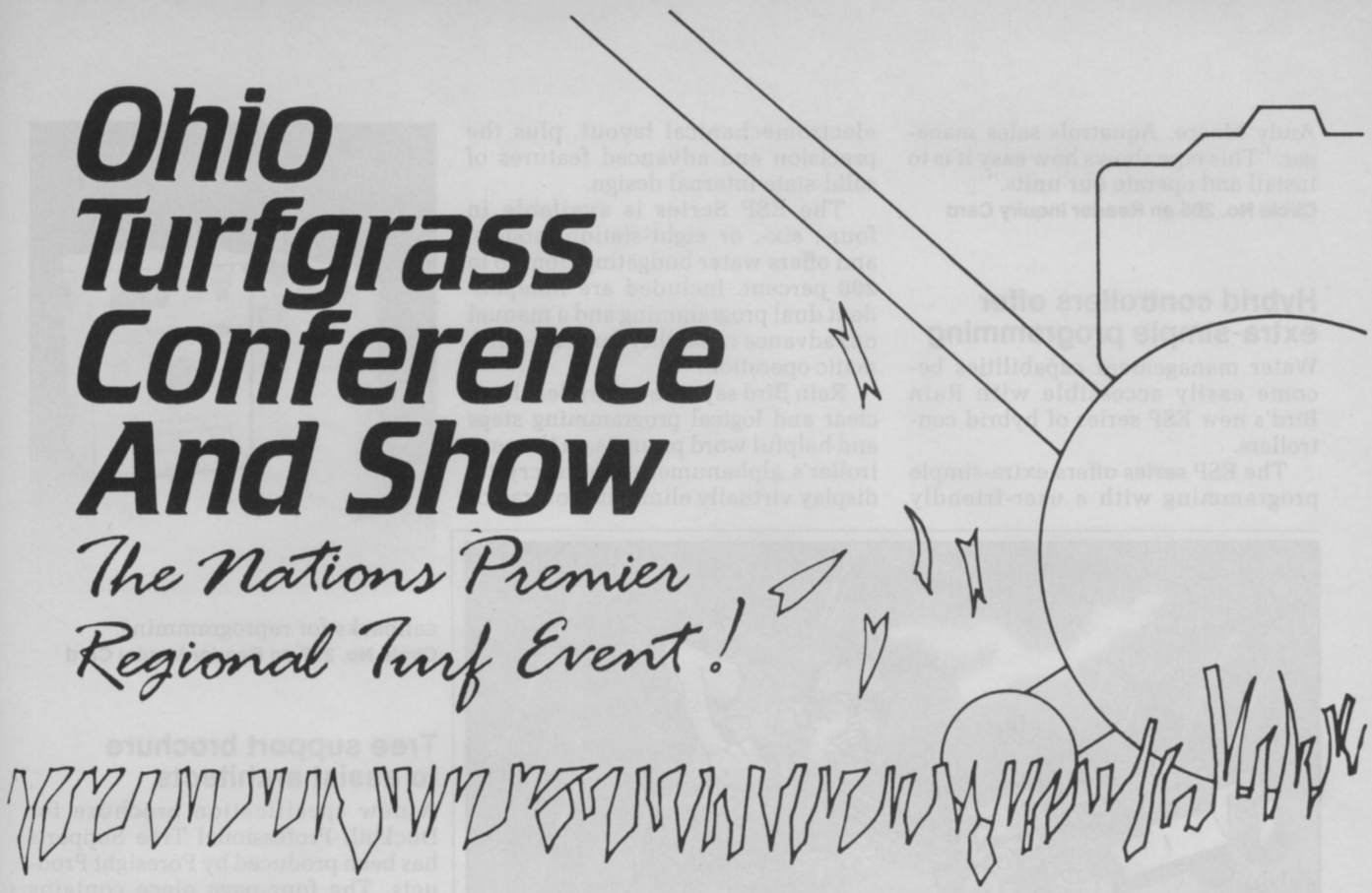

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Circle No. 118 on Reader Inquiry Card

Andy Moore, Aquatrols sales manager. "This tape shows how easy it is to install and operate our units."

Circle No. 206 on Reader Inquiry Card

Hybrid controllers offer extra-simple programming

Water management capabilities become easily accessible with Rain Bird's new ESP series of hybrid controllers.

The ESP series offers extra-simple programming with a user-friendly electromechanical layout, plus the precision and advanced features of solid-state internal design.

The ESP Series is available in four-, six-, or eight-station models, and offers water budgeting from 10 to 200 percent. Included are independent dual programming and a manual on/advance capability for semi-automatic operation.

Rain Bird says the controllers have clear and logical programming steps and helpful word prompts on the controller's alphanumeric liquid crystal display virtually eliminate contractor

callbacks for reprogramming.

Circle No. 207 on Reader Inquiry Card

Tree support brochure to assist architects

A new specification brochure for Duckbill Professional Tree Supports has been produced by Foresight Products. The four-page piece contains complete detailed drawings and specifications of components for all Duckbill Tree Support models, which are used to support trees up to 10-inch caliper and larger.

The company says landscape architects will be able to transfer drawings and specs directly from the new brochure to their own planting details.

The Duckbill Professional Tree Guying kits include three pre-assembled guy lines, each consisting of a Duckbill anchor, galvanized steel cable, turnbuckle, tree collar and all necessary hardware.

Circle No. 208 on Reader Inquiry Card

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BOX NUMBER REPLIES: Mail box number replies to: LANDSCAPE MANAGEMENT, Classified Ad Department, 1 East First St., Duluth, MN 55802. Please include box number in address.

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GRAYSON COLLEGE, Denison, Texas. Two-year technical program in Golf Course and Turfgrass Management. 18-hole golf course on campus. Dormitories, placement assistance, financial aid and scholarships available. Contact: GCC, 6101 Grayson Drive, Denison, TX 75020. 214-465-6030, extension 253. 12/90

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REP WANTED: Producer of 100% organic soil conditioner, needs rep working in AR, OK, TX, MO & TN area. Call Jim Tucker 501-374-3110. P.O. Box 141, North Little Rock, AR 72115. 11/90

Sales Representative: Great opportunity for energetic, self-motivated individual for full time sales. Interesting and challenging work in So. California for a distributor of specialty agricultural chemicals. PCA license and/or degree in biological science required. Turf/landscaping experience preferred. Excellent company benefits. EOE. Non Smoking. Send resume: P.O. Box 1117, Cerritos, CA 90702. 11/90

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WANT TO BUY OR SELL A GOLF COURSE? Exclusively golf course transactions and appraisals. Ask for our catalog. McKay Golf and Country Club Properties, 15485 N. East Street, Lansing, Michigan 48906. Phone (517)484-7726. TF

FOR SALE: Residential lawn maintenance business. Well-established, prime clientele. Call 704-549-4887 weeknights after 7:00 p.m. 11/90

CURB KING: Curbing machine that lays continuous concrete landscape borders. $2695. Low investment, high returns. For information call 303-434-5337 or write P.O. Box 40567, Grand Junction, CO 81504. 11/90

For sale by owner in Northeast Ohio a well established complete grounds maintenance company. Experiencing a high growth potential. Terms available to qualified buyer. Owner has other financial commitments. Contact: P.O. Box 6054, Akron, Ohio 44312. 11/90

Learn how to make $1000+ a weekend, aerating lawns. My complete manual shows you how to make tons of cash. Send for free information. A 1 Lawn Aeration, 3403 Dorchester Dr., Suite 200, San Diego, CA 92123. 11/90

HOW TO EARN UP TO THREE HUNDRED DOLLARS PER HOUR IN LAWN RENOVATION. Approximately 150 pages. **$39.95. HOW TO EARN AT LEAST 60 DOLLARS PER HOUR MOWING GRASS...AND STILL BE THE LOW BIDDER. $29.95.** Written by contractor with 15 years experience. GOMC, 1049 Bluegrass Parkway, Louisville, KY 40299. VISA/MC. (502)499-9031. 12/90

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Scotts Professional Division is seeking qualified candidates for the position of ProTurf Tech Rep within it's national sales force.

Tech Reps are responsible for the sale, promotion, and servicing of Scotts commercial ProTurf products to those professionals responsible for the management of large turf areas such as golf courses, college campuses, and athletic fields. Tech Reps specialize in product knowledge and agronomic expertise to recommend and sell the Scotts ProTurf product line.

The ideal candidate will have a college degree in turf management or agronomic science and turf related job experience.

Scotts offers an excellent starting salary plus incentive and a comprehensive benefit program including profit sharing. Interested candidates should send a resume with current salary level in confidence to:

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MAINTENANCE SALES/SERVICE REPRESENTATIVE. Progressive, 35 year old San Francisco Bay area firm seeking long-term employees. Horticulture background, related degree preferred, sales experience helpful. Send resume to: Personnel Dept., **CAGWIN & DORWARD,** 1257 Quarry Lane, Suite 145, Pleasanton, CA 94566. 415-462-8881. 11/90

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Two Vermeer Tree Spades: *T-44 on C-30 '82 Diesel Chevy, Like New $11,500. *T-66 on C-65 '73 Gas Chevy, $11,000. (405)842-7177. TF

NEW and USED EQUIPMENT--Asplundh, Hi Ranger and Lift-all forestry bucket trucks, Chipmore wood chippers. Mirk, Inc., (216)669-3567, (216)669-3562, 7629 Chippewa Road, Orrville, Ohio 44667. TF

BUCKET TRUCKS, Straight Stick, Corner Mount and Knuckle Boom Cranes. Brush Chippers - New Asplundh (Morbark Disc Type), New Asplundh Drum Type. Best prices anywhere. Used Chippers - Asplundh, Woodchuck, etc. 2 to 8 usually in stock. Sprayers, Dumps, Stakes, Log Loaders, Crew Cab Chip Box Dumps, Railroad Trucks, 50 in stock. Sold as is or reconditioned. Opdyke's, Hatfield (Philadelphia Area) 215-721-4444. TF

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AD INDEX

NO.	ADVERTISER	PAGE NO.
101	Bartlett Tree Experts	50
102	Bowie Industries, Inc.	8
103	Deere and Co., John	2-3
104	DowElanco/ Broadway	28-29
105	DowElanco/Team	13
106	Excel Industries, Inc.	25
107	Exmark Manufacturing Co., Inc.	52
108	Growth Products LTD.	14
109	Howard Johnson Enterprises	23
110	Jacobsen Div. of Textron	CV3
111	Lebanon Chemical Corp.	21
112	Lesco, Inc.	45
113	Lofts Seeds, Inc.	CV4
114	Lowe Manufacturing Co.	12
115	MVTGA	11
116	Mobay Corp.	22
117	Nor Am Chemical Co.	37
118	Ohio Turfgrass Association	51
118	Olathe Manufacturing, Inc.	41
119	Olathe Manufacturing, Inc.	41
120	Olathe Manufacturing, Inc.	41
122	Ransomes, Inc.	15
124	Spraying Devices, Inc.	7
295	Simplicity Manufacturing,Inc.	33
125	Standard Tar Products Co., Inc.	40
123	Tecumseh	35
128	Tee 2 Green Corp.	CV2
129	Titan Turf Equipment	14
126	Toro Co.	43
130	Turf Seed Co.	5
131	Vigoro Industries, Inc.	44
132	Walker Manufacturing Co.	22

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PROBLEM MANAGEMENT

Using alleopathic plants

Problem: *Can you tell me something about the uses of alleopathic plants for controlling undesirable weeds? (New York)*

Solution: Alleopathy is any direct or indirect harmful effect of one plant on another through production and release of chemicals into the environment. This is now recognized as another factor in crop production and weed management.

Generally, these secondary plant metabolites are non-specific in that they may inhibit a number of different plants.

Alleopathic compounds may enter the environment in different ways. Aromatic compounds can be volatalized while water-soluble toxins can be leached from root or shoot excretions. Chemicals released as a result of microbial decomposition of plant residue can also be toxic and can be considered to be alleopathic in some respect.

Often it is difficult to distinguish between competition and alleopathy. Competition for light, water and nutrients is very common among plants. Since it is difficult to distinguish between competition and alleopathy, many scientists prefer to use the term "interference" when the cause is not clear.

Researchers at Michigan State University found that grain sorghum suppresses weed growth in the field and in the lab. Sunflower plants were also known to inhibit certain weeds. Although not fully understood, dense turfgrass can "choke" weeds through their competitive ability and perhaps through their alleophatic toxic metabolites. This aspect needs further study.

Compost also contains toxic plant and microbial metabolites having alleopathic effect. This aspect also needs more research before we could use compost extract for weed management. Soil moisture, pH, and temperature may play an important role in the release and activity of these secondary compounds.

The concept of alleopathy for weed management is indeed interesting; however, we have a long way to go before understanding its practical use.

pH-adjusting products

Problem: *Regarding your answer to the question on pH adjusting that appeared in February, some additional products widely used to buffer pH (not acidize the tank as most other iron products or phosphoric acid will do) are Agri-Plex and Lawn-Plex, of R.G.B. Laboratories.*

We don't know of any other micronutrient products that are true buffers (adjust pH up or down) besides the above-mentioned products. Therefore, you need not buy pH-adjusting solutions and you practically get the iron/micronutrients for nothing.

Solution: I am not familiar with the practical use of these products for pH adjustment and their effectiveness. Therefore, I would appreciate the comments of any readers who have used these products, even on a small scale.

Ridding greens of angleworms

Problem: *How do I get rid of angleworms on greens? There has to be a product or method that will not kill bermudagrass and is legal. (Wisconsin)*

Solution: Earthworms are often called angleworms because they are used as fishing bait. Generally, turf managers consider earthworms to be beneficial because their feeding activity enriches the soil, their burrowing activity can improve soil aeration, and the soil they ingest with their food becomes a good source of fertilizer when excreted.

The flip side is that earthworms often make mounds of soil in the turfgrass area and, during heavy rains or saturated soil conditions, a large number of earthworms may be found wandering and/or dead on sidewalks, driveways, etc.

Although these activities can be a nuisance or objectionable to some, no pesticides are currently registered to manage these. However, reports indicate that certain soil-applied insecticides on lawns may have some adverse effect on earthworm population. These products, when applied according to label specifications, will not harm bermudagrass but will not be legal to treat for earthworm management.

Also, please note that bermudagrass is not adapted to your area, so you might want to make sure what variety of turf you're dealing with. **LM**

Balakrishna Rao is Manager of Technical Resources for the Davey Tree Co., Kent, Ohio.

Questions should be mailed to Problem Management, LANDSCAPE MANAGEMENT, 7500 Old Oak Boulevard, Cleveland, OH 44130. Please allow 2-3 months for an answer to appear in the magazine.

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